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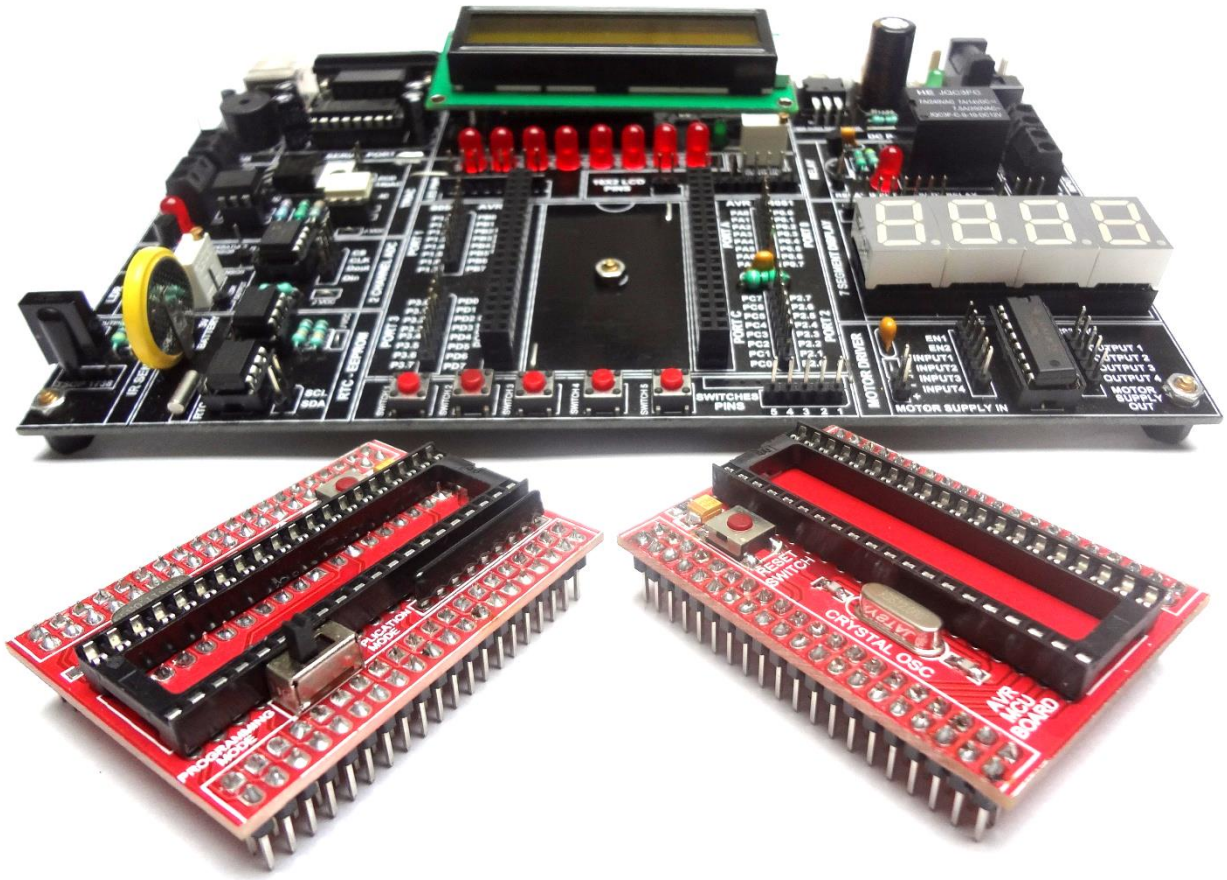
# 8051 AND AVR

## DEVELOPMENT BOARD




# USERMANUAL

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# 1. INTRODUCTION

## 1.1. What is '8051 and AVR Development Board'?

'8051 and AVR Microcontroller Development Board 'is generic embedded Application development board, which shares a one common application platform for two different 8051 and AVR Microcontroller, which helps in Learning, Developing , Testing and Prototyping embedded applications.

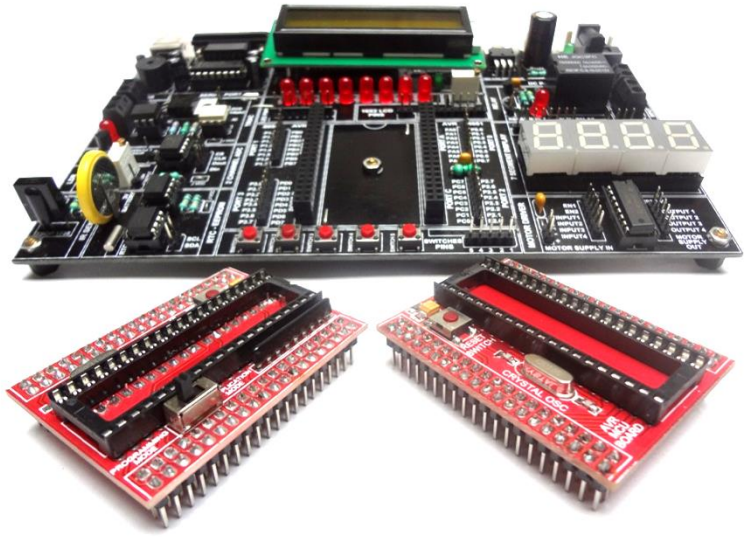


**Figure showing 8051 and AVR Microcontrollers Development Board**

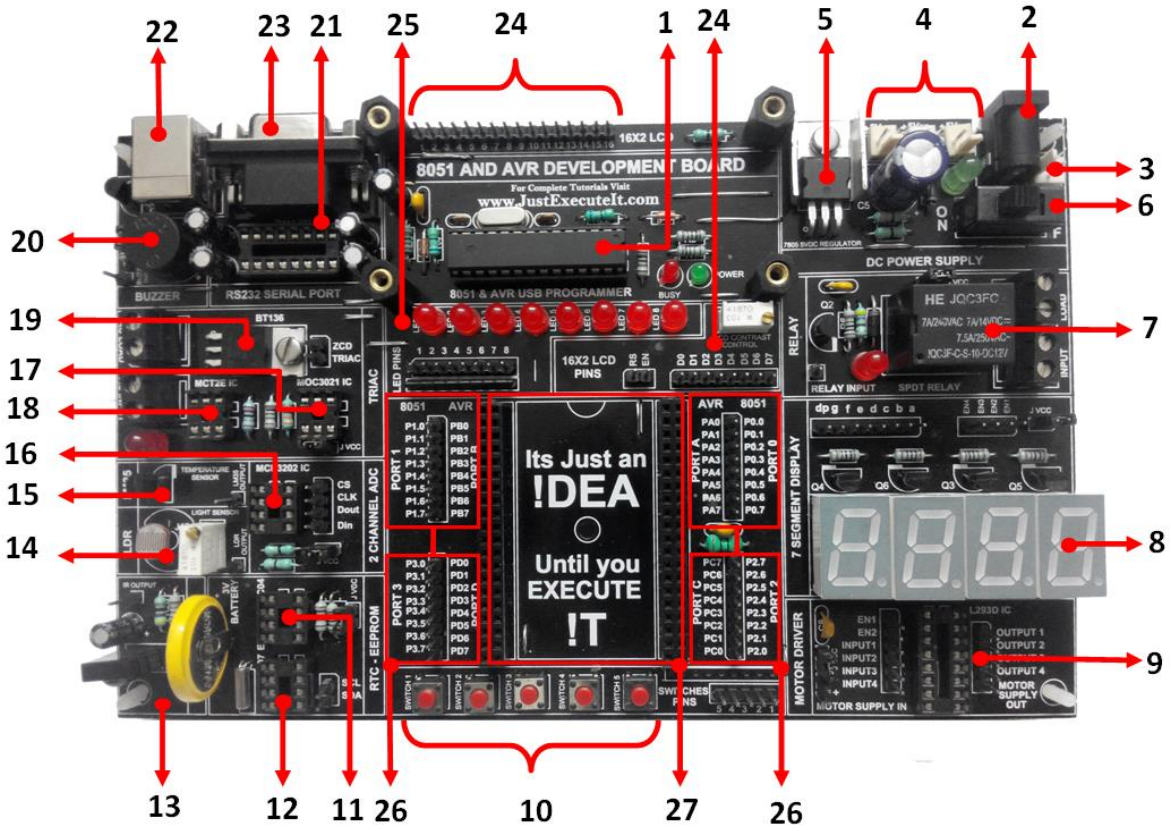
## 1.2. Why do we need it?

Today in our education system student are taught lost of embedded theoretical concepts, which restricts their vision to their text book Level itself. Stepping forward, we need a practical exposure to these theoretical concepts with hands-on experience on real time Embedded Systems. There by this development Board providing an excellent platform for the young generation to learn, to Develop and to Excel their skills in Embedded Systems. There by, giving the feather to their vision and enabling them, to make their ideas come alive.

## 1.3. Who can use it?

This Development Board Designed specifically for Students, Faculties, Hobbyists and R&D Engineers. **'Students'** using this Development Board gets practical exposure to electronic component and its basic functional applications. This helps in clear understanding the embedded concepts. **'Faculties'** using this development board may enhance their level of teaching, by explaining their student, How they can connect present embedded system to real World Environment.. For **'Hobbyists'** this development board enables them to execute their embedded ideas very quickly and easily at very low cost and in short time.. **'R&D Engineers'** using this development Board can Design, Develop and Test their many prototypes before finalizing it to be a product.

**FIGURE (A) 8051 AND AVR DEVELOPMENT [0R MOTHER BOARD}**




- Following are labeling details for the Main Mother board shown above:

1. On Board 8051and AVR USB Programmer
2. 9 ~12VDC Input Supply with DC-Jack
3. 9 ~12VDC Input Supply with 2-Pin Conn
4. 5VDC Input Supply with 2-Pin Connector.
5. 5VDC Regulator-7805
6. Power ON/OFF Switch
7. SPDT 12VDC Relay
8. Array of four 7-Segment Display
9. Motor Driver- L293D IC
10. Array of 5-Switches
11. EEPROM-24C04 IC
12. RTC-DS1307 IC
13. IR Sensor-TSOP 1738
14. Light Dependent Resistor(LDR)
15. LM35-Temperature Sensor
16. 2Channel ADC-MCP3202 IC
17. Optoisolator-MOC3021 IC
18. MCT2E IC
19. Bidirectional TRIAC-BT136
20. Buzzer
21. MAX232 IC
22. USB Port
23. RS232 Serial Port
24. LCD-16X2 Display
25. Array Of LED'S
26. Port Pins for 8051 and AVR MCU
27. Space for 8051 and AVR Daughterboard's

**FIGURE (B) 8051 MICROCONTROLLER UNIT [OR 8051 DAUGHTER BOARD]**

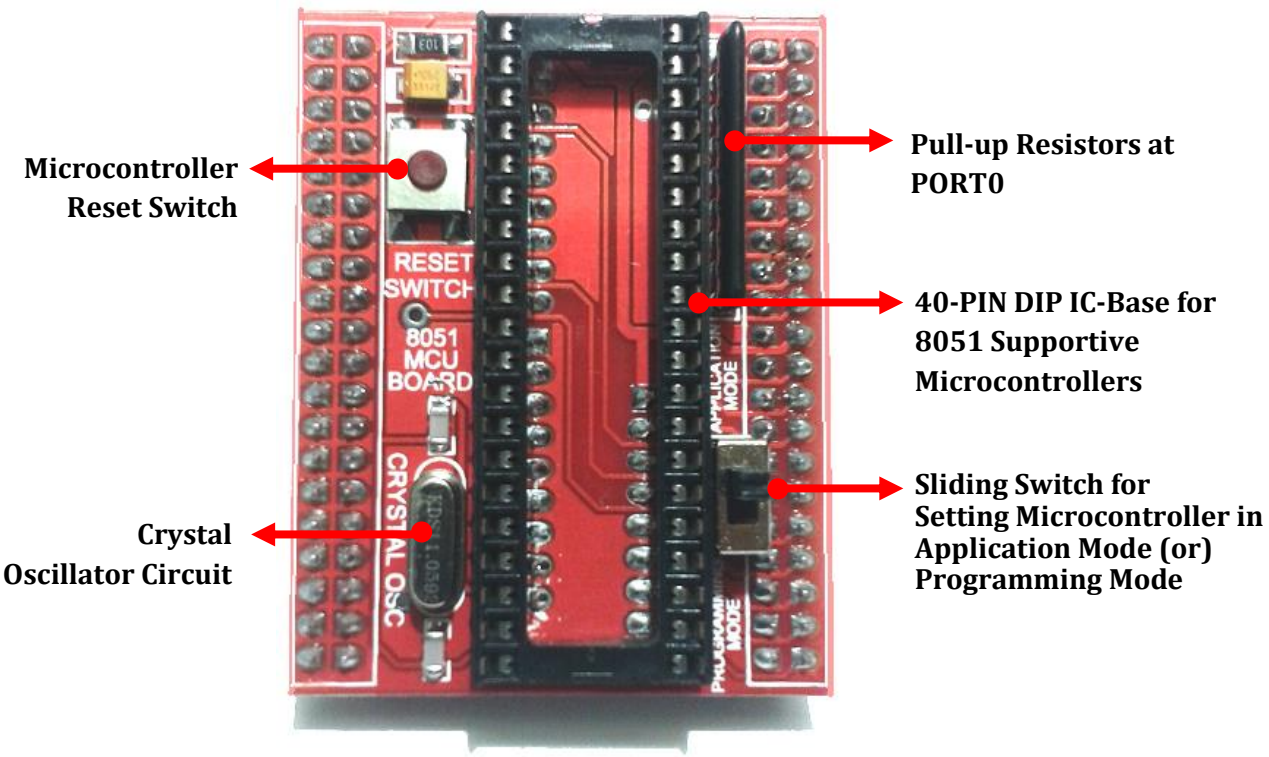
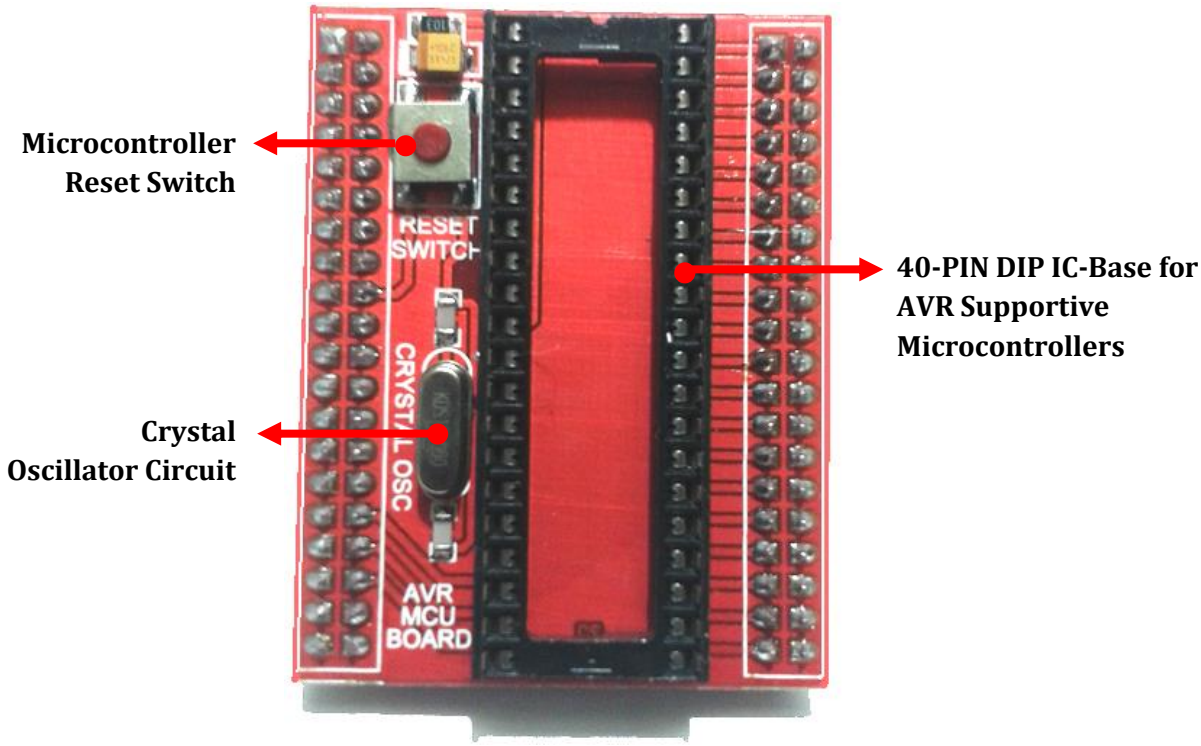

Microcontroller Reset Switch
Crystal Oscillator Circuit
Pull-up Resistors at PORT0
40-PIN DIP IC-Base for 8051 Supportive Microcontrollers
Sliding Switch for Setting Microcontroller in Application Mode (or) Programming Mode
RESET SWITCH
8051 MCU BOARD
CRYSTAL OSC

**FIGURE (C) AVR MICROCONTROLLER UNIT [OR 8051 DAUGHTER BOARD]**



## 2. FEATURES

### 2.1. Supports Both 8051 and AVR Microcontrollers

Development board supports both 8051 and AVR 40-Pin DIP Type Microcontrollers. The Entire Development Kit Consists of 3 Boards.

**2.1.1.** Application Interfacing Board or Mother Board :The development board consists of on board 14 Application Interfacing Sections or Modules such as :

- ✓ SPDT Relay Section
- ✓ 7-Segment Display
- ✓ Motor Driver Section
- ✓ Array of Switches
- ✓ RTC-EEPROM Section
- ✓ IR Sensor Module
- ✓ LM35 Sensor Module
- ✓ LDR Sensor Module
- ✓ 2 Channel ADC Section
- ✓ TRIAC Section
- ✓ Mini Buzzer
- ✓ RS232 Serial Comm.
- ✓ LCD Display Section
- ✓ Array of LED Section

Each Section is explained in detail, in further documentation with their respective interfacing Circuits and Component Labeling.

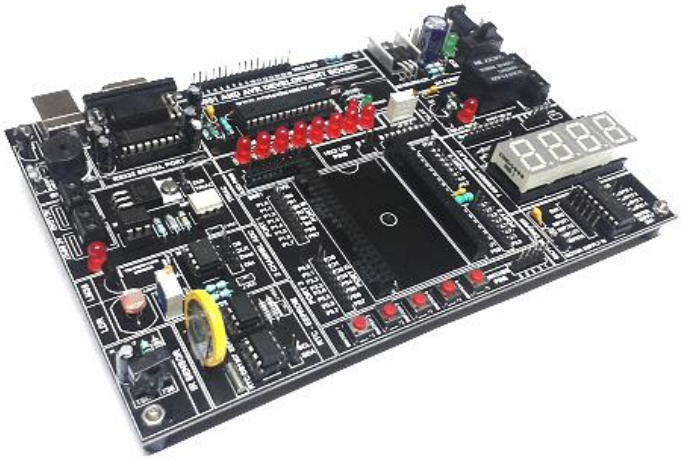


**Figure showing Application Interfacing Board (or) Mother Board**

**2.1.2.** 8051 Microcontroller Board or 8051 Daughter Board:.
Whenever the user wants to work on only 8051 Microcontroller Type, then this board can be easily interfaced to the Main Mother Board at its Center. And also it can be removed easily.

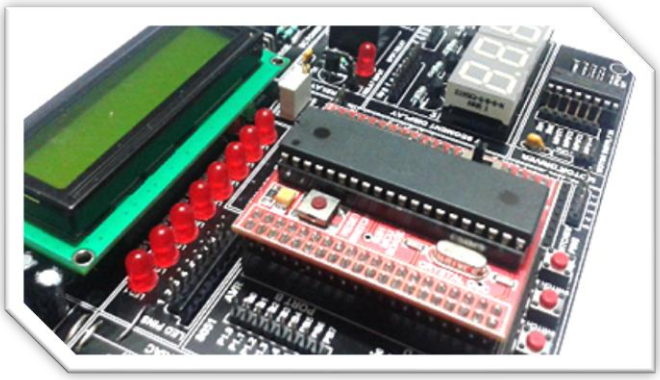


**Figure Showing 8051 Daughter Board connected to Mother Board at its Center**

**2.1.3.** AVR Microcontroller Board or AVR Daughter Board: Whenever the user wants to work on only AVR Microcontroller Type, then this board can be easily interfaced to the Main Mother Board at its Center. And also it can be removed easily.

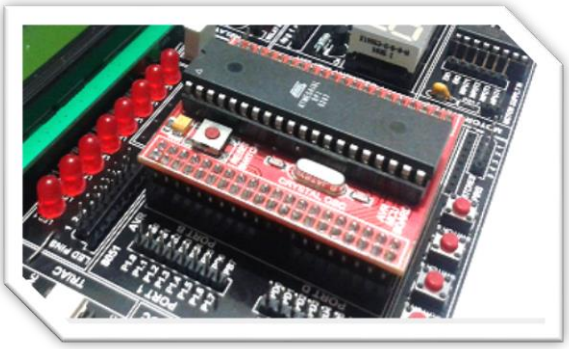


**Figure showing AVR Microcontroller Board connected on Mother Board**

## 2.2. In Build USB ISP Programmer :

Microcontroller programming has been made simpler than ever before. The Development board has in build USP ISP (In-System Programming) Programmer which supports both 8051 and AVR Microcontrollers. Programmer gives the user a friendly environment with USB communication and easy GUI.

**Figure shows on board 8051 and AVR USP Programmer**

### USB Programmer Features:

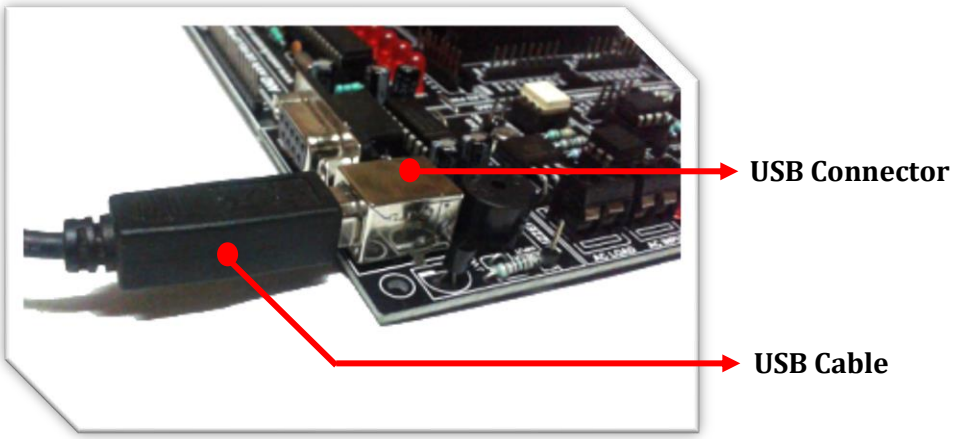
- Supports Windows Xp , Windows 7, Windows 8.0 , Windows 8.1 OS
- USB powered, No external supply is required
- Supports ProgISP & Khazama V1.6.2 Software to burn '.Hex' file into Target Microcontrollers
- Programming Speed: about 2 -10 Seconds
- Supports wide range of AVR and 8051 microcontrollers (For details refer section 3.0

On connecting AVR Daughter board on the main Mother board; the USB Programmer gets directly interfaced to it. Whereas, for 8051 Daughter board, sliding switch is used to set it in Programming Mode (Refer Section 4.2 for clear explanation).

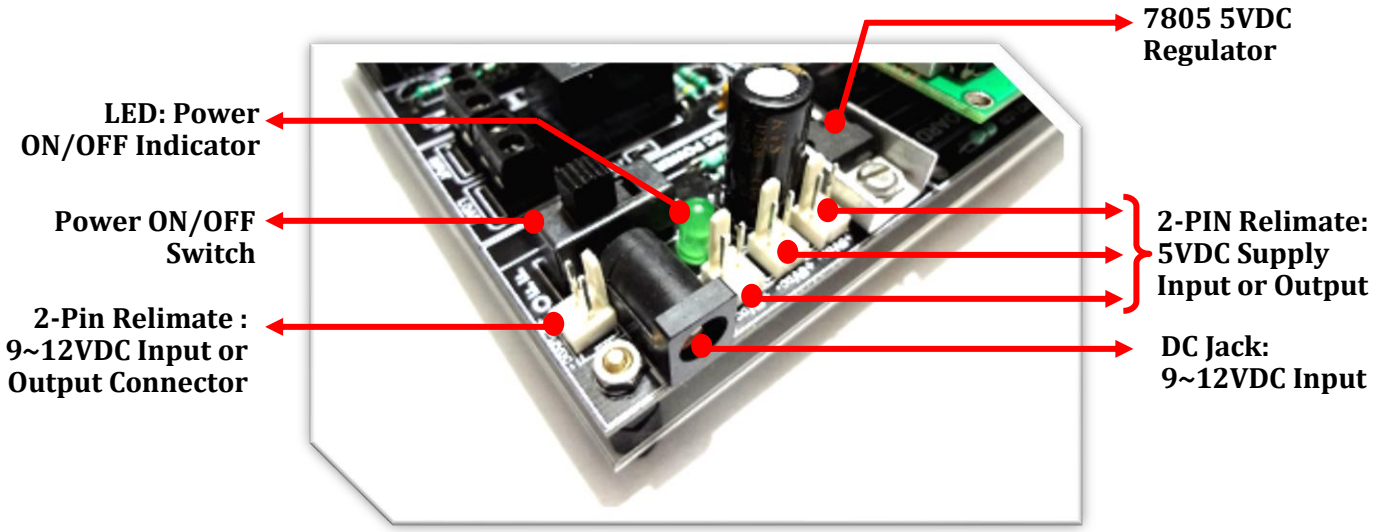
## 2.3. DC Power Supply

A regulated power supply is a standalone unit, the function of which is to supply a stable voltage, to a circuit or device that must be operated within certain power supply limits. The output from the regulated power supply is always Regulated DC. This Development board works on 3 Way supply.

**First way,** It can be USB Powered and can completely operated all sections of Development board, except 12~9VDC Relay Section. As it need extra 9~12VDC Supply to operate.




**Second way,**12VDC Adapter Input through DC Jack, The voltage further gets regulated to 5V DC at 7805 Voltage regulator.


7805 5VDC Regulator
LED: Power ON/OFF Indicator
Power ON/OFF Switch
2-Pin Relimate : 9~12VDC Input or Output Connector
2-PIN Relimate: 5VDC Supply Input or Output
DC Jack: 9~12VDC Input

**Third way,** Through 2-Pin Relimate Input or Output Connectors. The main advantage of these pins is that we can give input supply to this Development board or we can Take

Supply out from this Development Board to power some other Interfacing Modules Such as GSM, ZIGBEE, GPS, etc.

### 2.4. SPDT-Relay Unit

Relay section consists of 12 VDC SPDT Relay, which can be operated at 9-12VDC Input at DC Jack. On giving the Control Input from Microcontroller to 'Relay Input' Pin, Connected Load at the screw connector can be controlled.

**Figure showing Circuit Diagram for SPDT Relay section on Mother Board**

### 2.5. Array of Four 7-Segment Display

A seven segment display is the most basic electronic display device that can display digits From 0-9. They find wide application in devices that display numeric information like digital Clocks, radio, microwave ovens, electronic meters etc. The most common configuration has an array of eight LEDs arranged in a special pattern to display these digits. They are laid out as a squared-off figure '8'. Every LED is assigned a name from 'a' to 'h' and is identified by its name. Seven LEDs 'a' to 'g' are used to display the numerals while eighth LED 'h' is used to display the dot/decimal. Many electronic devices use four seven segment displays to display their output. The four seven segment displays can be connected in two ways. One way is to connect the four displays to the four ports of the microcontroller. However this is not a good way, as this will block all the ports and we cannot use microcontroller for any other purpose.

To overcome this problem, we use multiplexing of seven segment display. In multiplexing we use the concept of persistence of vision i.e., human brain cannot differentiate between two events occurring at a time difference of less than milliseconds. In this case the four digits are displayed one after the other so fast that the human brain cannot detect the difference. Although only one digit is displayed at a time it appears as a four digit number. Below figure the schematics for the same.

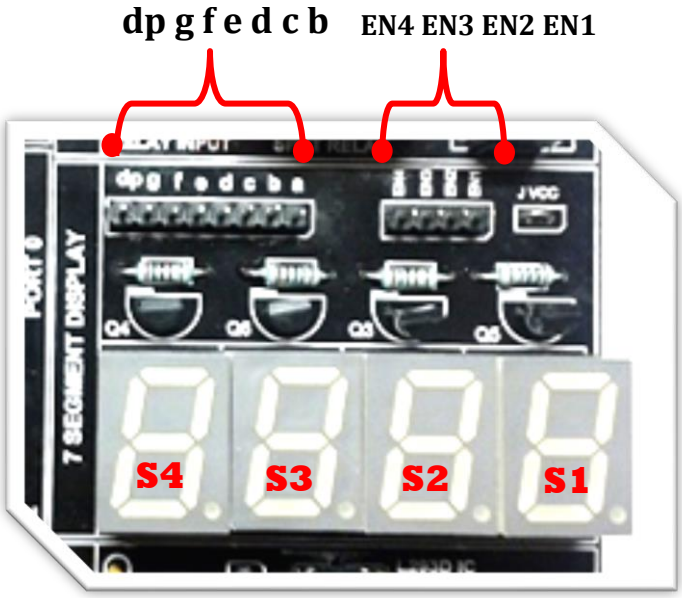



Figure showing Series of four 7-Segment Module on Mother Board

## 2.6. Motor Driver

The Motor Driver IC L293D is a monolithic integrated high voltage, high current four channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads (such as relays solenoids, DC and stepping motors) and switching power transistors.

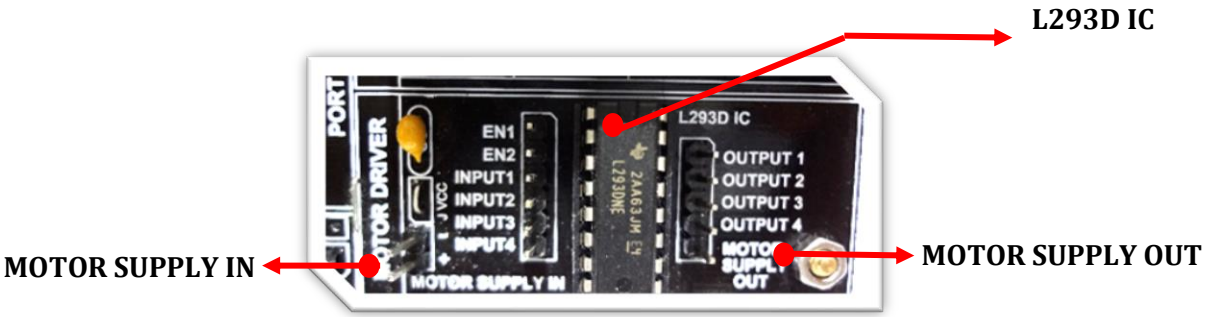



Figure showing Motor Driver Module on Mother Board

TheL293D has 2 enable pins and 4 input pins, particular enable pin for each pair of input pin. If EN1 is enabled IN1 and IN2 can be used for any one motor and if EN2 is enabled IN3 and IN4 can be used for another motor.

## 2.7. RTC and EEPROM

The figure below shows the I2c section on the Development board. Here EEPROM (Electrically Erasable Programmable Read Only Memory) and RTC (Real time clock) are provided for user. EEPROM stands for electrically erasable programmable read only memory. It is a secondary storage device that once written (programmed) can hold data even when the power is removed. The EEPROM is a class of read only memory that can be

electrically erased and reprogrammed. The DS1307 Serial Real Time Clock is a low-power, full BCD clock/calendar plus 56 bytes of nonvolatile SRAM. Address and data are transferred serially via the 2-wire bi-directional bus. The clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The end of the month date is automatically adjusted for months with less than 31 days, including corrections for leap year. The clock operates in either the 24-hour or 12-hour format with AM/PM indicator. The DS1307 has a built-in power sense circuit which detects power failures and automatically switches to the battery supply

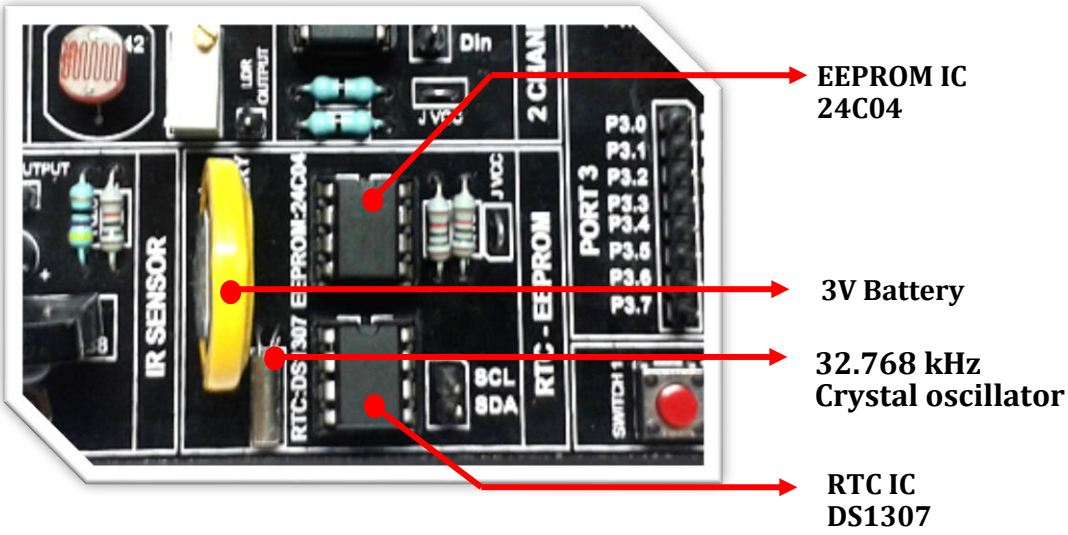



**Figure Showing RTC and EEPROM Module on Mother Board**

### 2.8. Infra Red (IR) Sensor

The **TSOP 1738** is a member of **IR remote control receiver** series. This IR sensor module consists of a PIN diode and a pre amplifier which are embedded into a single package. The output of **TSOP** is active low and it gives +5V in off state. When IR waves, from a source, with a centre frequency of 38 kHz incident on it, its output goes low. **TSOP module** has an inbuilt control circuit for amplifying the coded pulses from the IR transmitter. A signal is generated when PIN photodiode receives the signals. This input signal is received by an automatic gain control (AGC). For a range of inputs, the output is fed back to AGC in order to adjust the gain to a suitable level. The signal from AGC is passed to a band pass filter to filter undesired frequencies. After this, the signal goes to a demodulator and this demodulated output drives an npn transistor. The collector output of the transistor is obtained at pin 3 of

TSOP module. In this trainer board the output pin of the TSOP is connected to external interrupt pin of the controller. Whenever the TSOP receives the signal from the transmitter (TV Remote) the coded data is given to the controller. Where it is decoded and used according to application requirement.

**Figure Showing IR Sensor Module on Mother Board**

### 2.9. Light Dependent Resistor (LDR) Sensor

Light dependent resistor(LDR), also called as Cadmium Sulphide (CdS) cell or photo resistor is a resistor whose value depends upon the incident light intensity. In darkness, the resistance of LDR becomes high and in light, the resistance gets low.

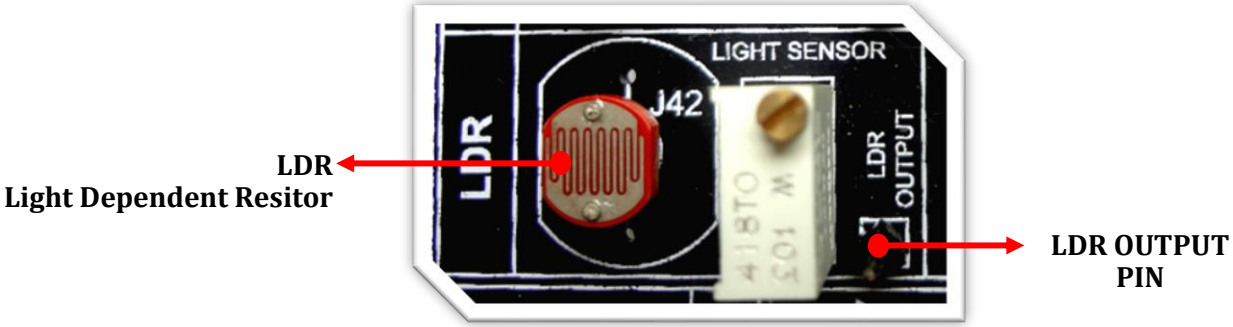



**Figure Showing LDR Module on Mother Board**

### 2.10. Temperature Sensor LM35

**LM35** is a precision IC **temperature sensor** with its output proportional to the temperature (in ºC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With **LM35**, temperature can be measured more accurately than with a thermistor. It also possess low self heating and does not cause more than 0.1 ºC temperature rise in still air.

The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every ºC rise/fall in ambient temperature, *i.e.,* its scale factor is 0.01V/ ºC.

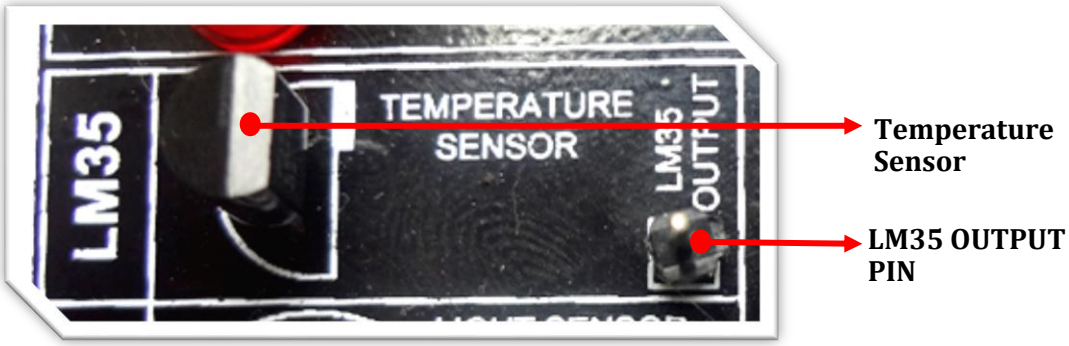



**Figure Showing LM35 Temperature Sensor Module on Mother Board**

## 2.11. 2 Channel External ADC

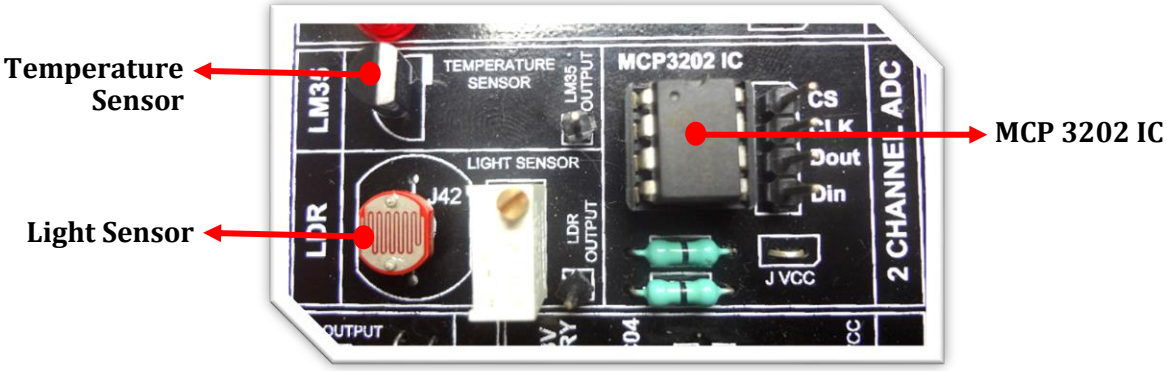



**Figure Showing 2Channel ADC interfaced with LM35 and LDR**

## 2.12. TRIAC

MOC3021: This is a 6-pin Dip random-phase opto-isolator TRIAC driver output. It contains GaAs infrared emitting diode and light activated silicon bilateral switch, which functions like a TRIAC. It is designed for interfacing between electronic controls and power TRIACS to control RC) resistive and inductive loads from the 240 AC operations.

BT136 (TRAIC): Planar passivated sensitive gate four quadrant TRIAC in a SOT78 plastic package intended for use in general purpose bidirectional switching and phase control applications. This sensitive gate TRIAC is intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits. IN this trainer Board TRIAC is used to drive the high voltage AC loads to control the firing angle of AC loads we need ZCD circuit along with TRIAC. Usually the TRIAC has three terminals gate, terminal one (T1) and terminal two (T2), gate is

connected to 8051 along with MOC 3021. Here MOC is used as to drive the TRIAC. If you want to do a program for TRIAC you must give logic level zero to MOC

Figure Showing TRIAC Section

## 2.13. Buzzer

The above image shows a very commonly used piezo buzzer also called **piezo transducer** operating at DC voltage. Encapsulated in a cylindrical plastic coating, it has a hole on the top face for sound to propagate. A yellow metallic disc which plays an important role in the producing sound can be seen through the hole.

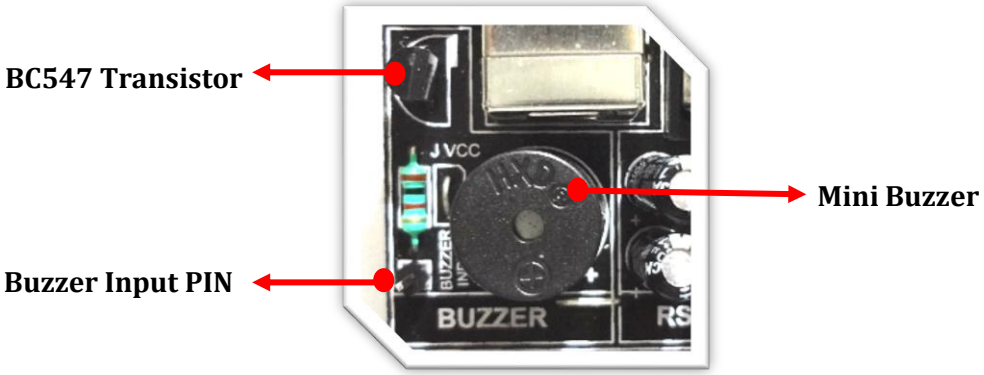



Figure Showing Buzzer Section.

## 2.14. Switches

Development board it has 5-momentary switches; you can use all these switches for your application. All switches are connected as shown in schematic diagram below; whenever you press the switch the logic level will be zero (0v) at respected port pin of Microcontroller.

Figure Showing Array of Switched on Mother Board

## 2.15. Light Emitting Diodes (LED'S)

In this board we are using 8 RED LEDs. The LED has 2 Terminals anode, and cathode. Cathodes are connected to Male Connector to glow particular LED and anode is connected to VCC along with resistor. You can glow the led by giving logic level zero (0v)

**Figure Showing Array of LED'S**

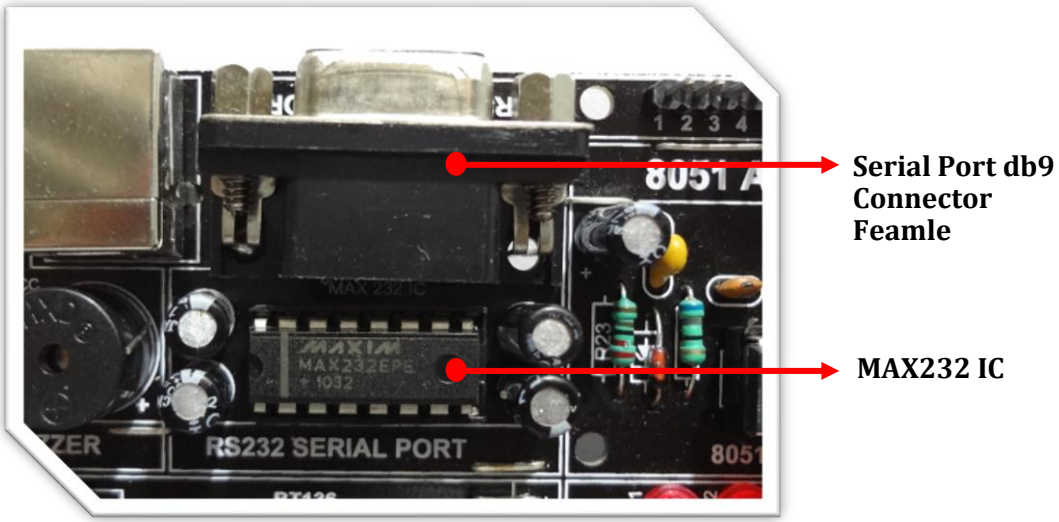
## 2.16. 16X2 Liquid Crystal Display (LCD)

A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The LCD can be operated both in 4 bit mode and 8 bit The RW pin is connected to ground as we don't need that because we are not reading anything from LCD.

**Figure Showing 16X2 LCD Placed on Mother Board at its TOP**

## 2.17. RS232 Serial Port

8051 and AVR Microcontrollers provides a transmit channel and a receive channel of serial communication. The serial signals provided on these pins are TTL signal levels and must be *boosted* and *inverted* through a suitable converter (Max232 is used in this) to comply with RS232 standard.




Schematic Circuit for RS232 Serial Communication

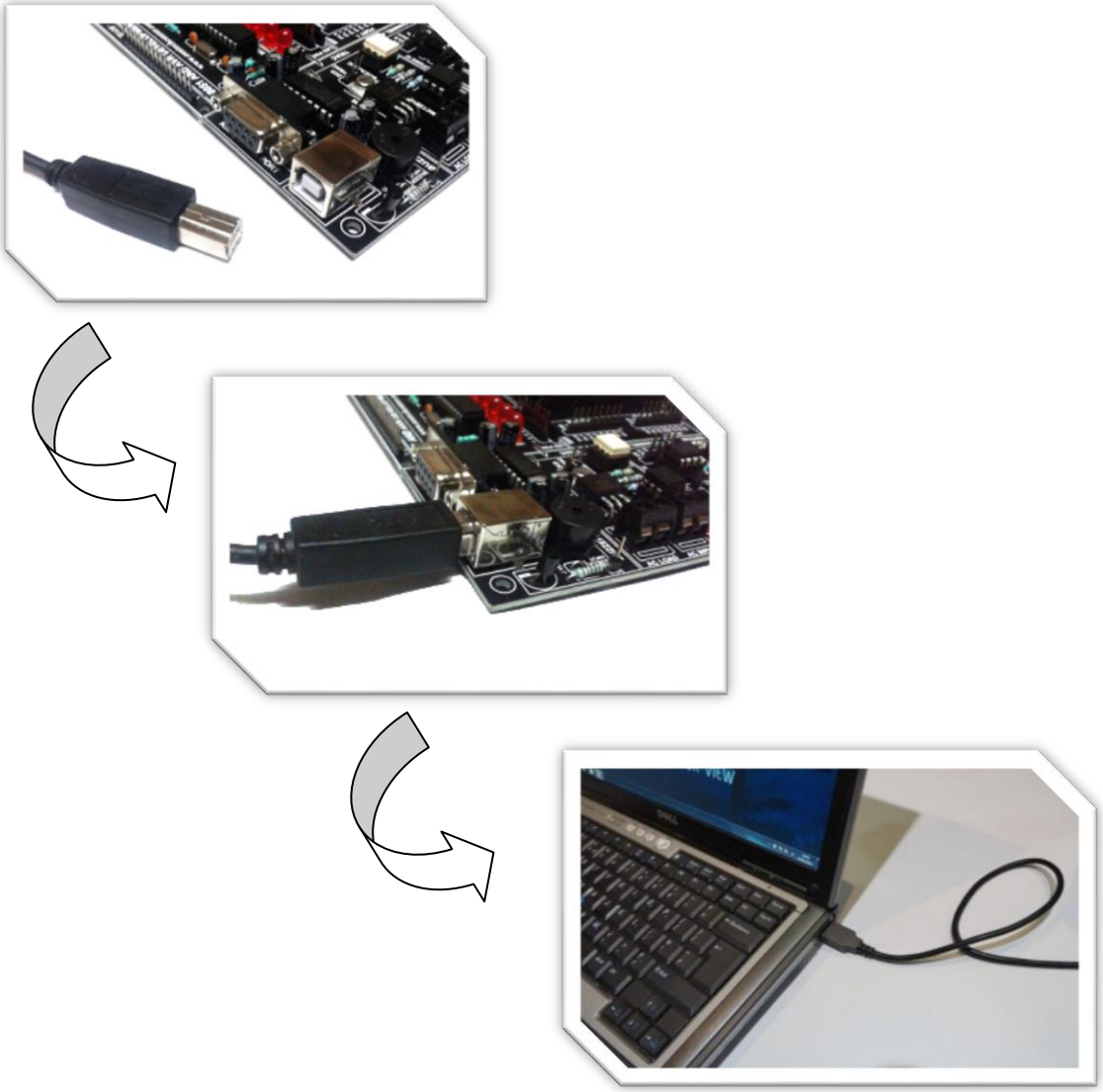
## 3. SUPPORTING DEVICES

| ATMEL 8051 MICROCONTROLLERS | ATMEL AVR MICROCONTROLLERS | |
|---|---|---|
| AT89S51 | ATMEGA 16 | ATMGEA 164 |
| AT89S52 | ATMEGA 32 | ATMEGA 324 |
| AT879S53 | ATMEGA 1284 | ATMEGA 644 |
| AT90S4414 | ATMEGA 8515 | |
| AT90S8515 | ATMEGA 8535 | |

# 4. GETTING STARTED

## 4.1. Connecting Development Board to PC

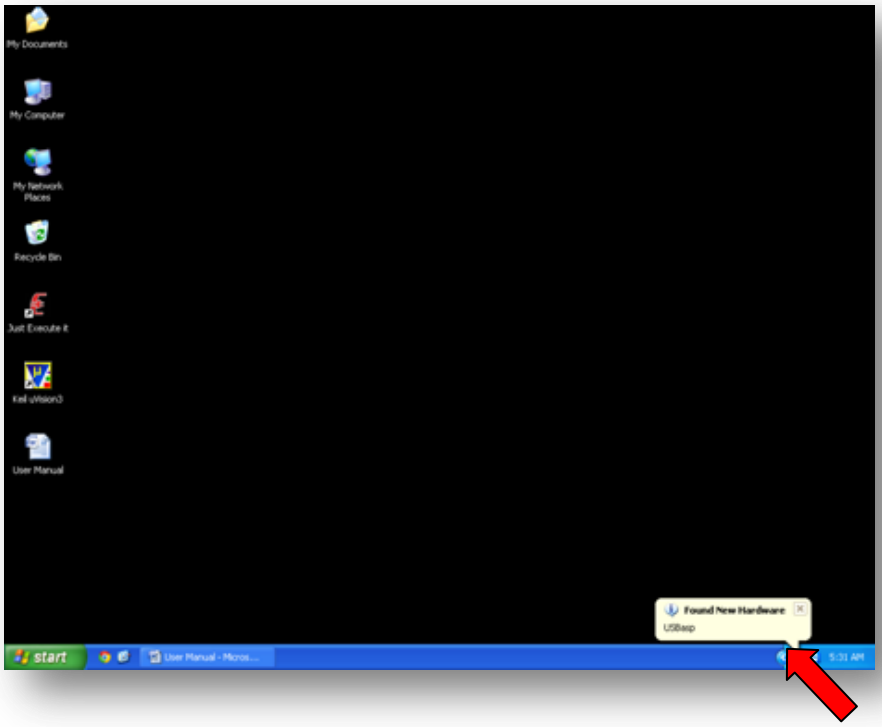
Plug one end of the USB cable into the USB connector on "**8051 and AVR Development Board**" Plug the other end into a **USB port** on your PC/Laptop as shown in the figure below.



## 4.2. Installing USB Drivers

### 4.2.1. Guidelines for Win-Xp Operating System Users

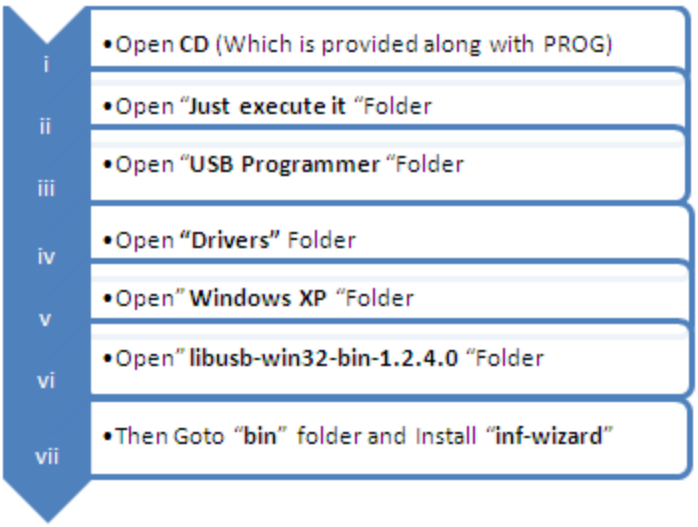
After connecting USB programmer to your computer's USB port. Your XP computer will detect USP Programmer and display the "Found New Hardware Wizard pops up.



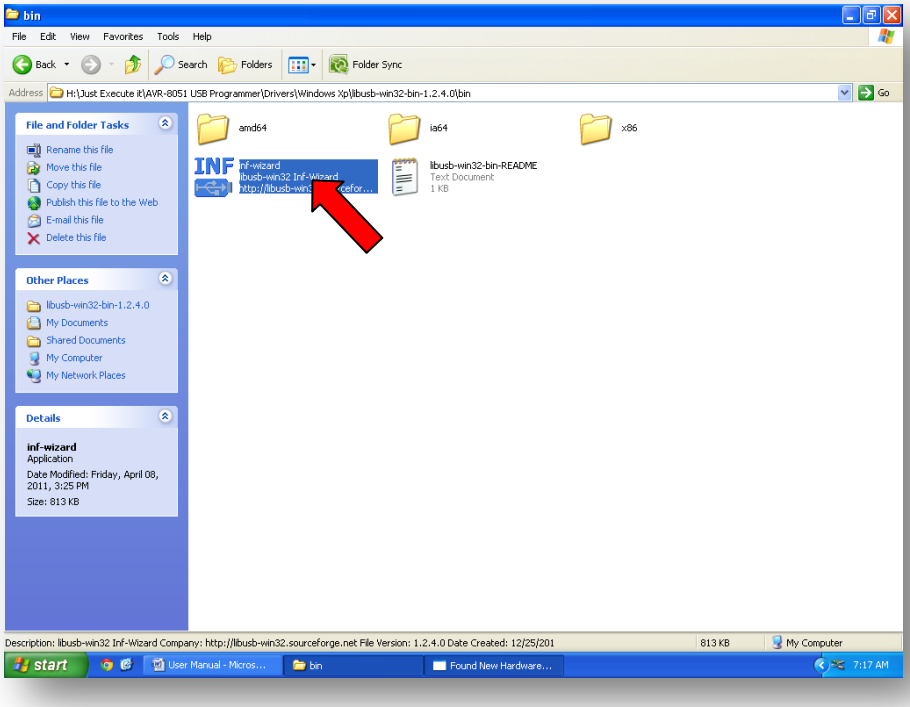

**Step1:** When the "Found New Hardware Wizard "window is displayed, click on "**Cancel".**

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USBasp
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

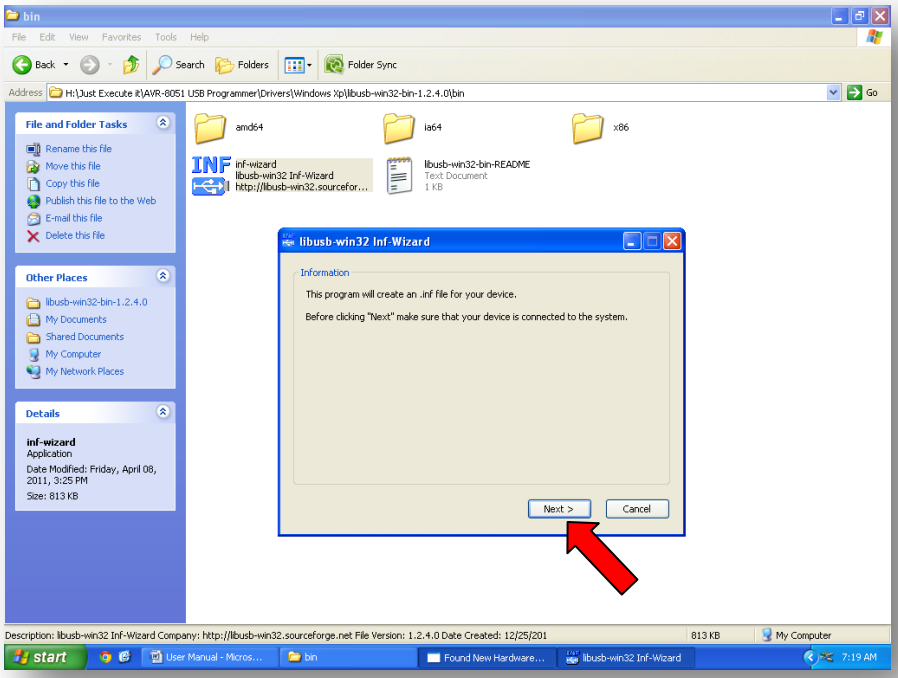
**Step2:** Then Go to "**libusb-win32-bin-1.2.4.0**"Folder and install **inf-wizard** software, which is located at following path: **H:\CD Drive \USB Programmer \Drivers \Windows Xp** as guided below in following steps**:**



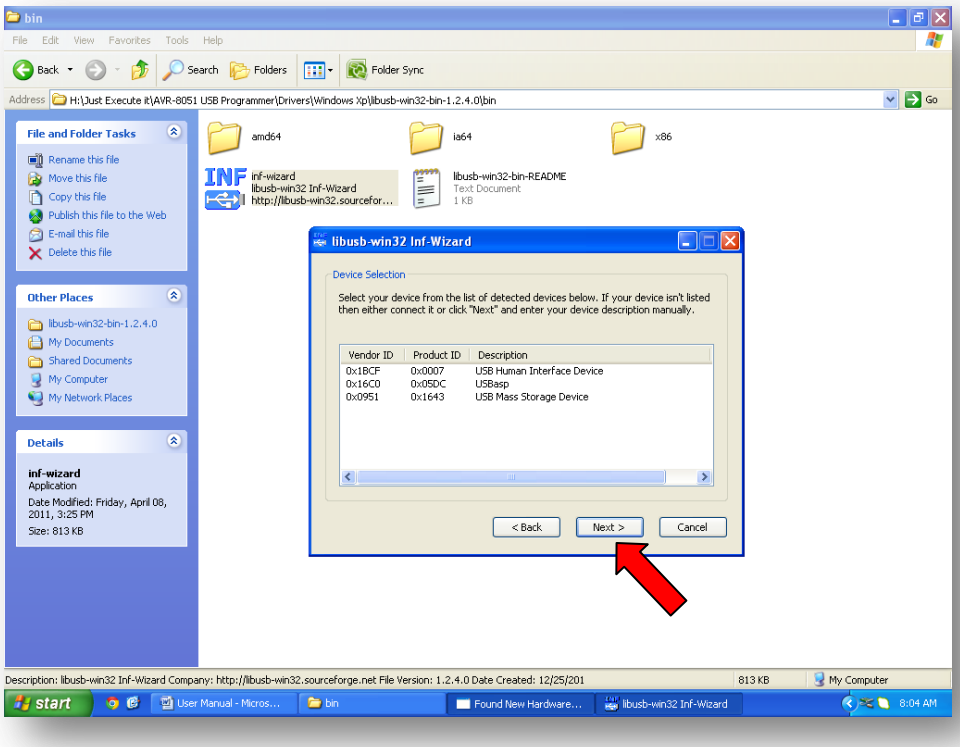

**Step3:** Double click on **INF** icon **and** Install "**inf-Wizard**"



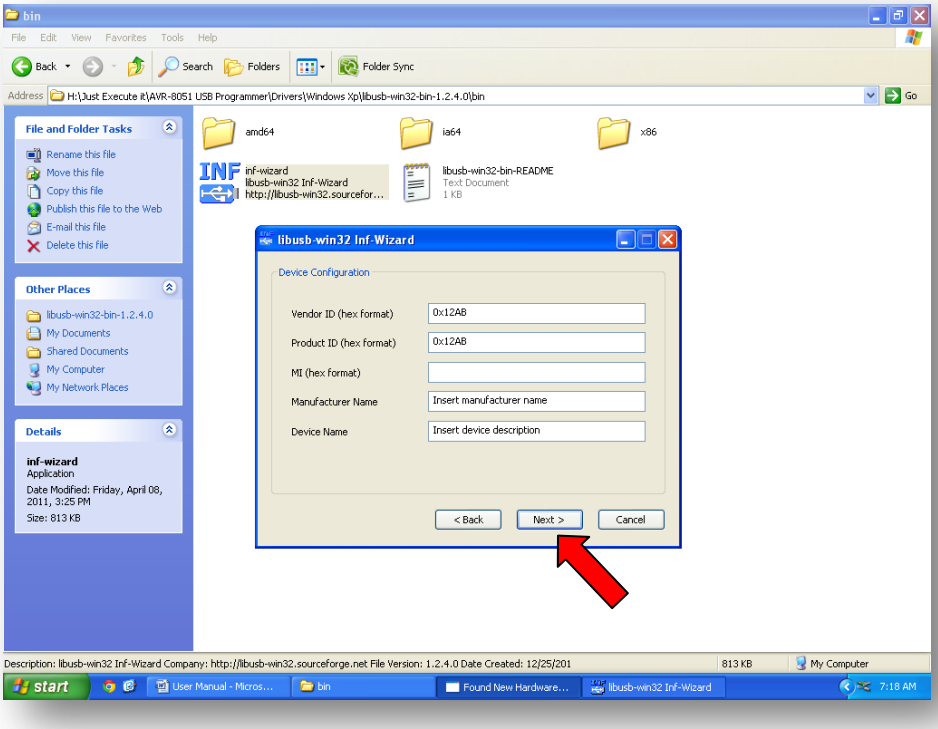
**Step 4:** Click on **Next**



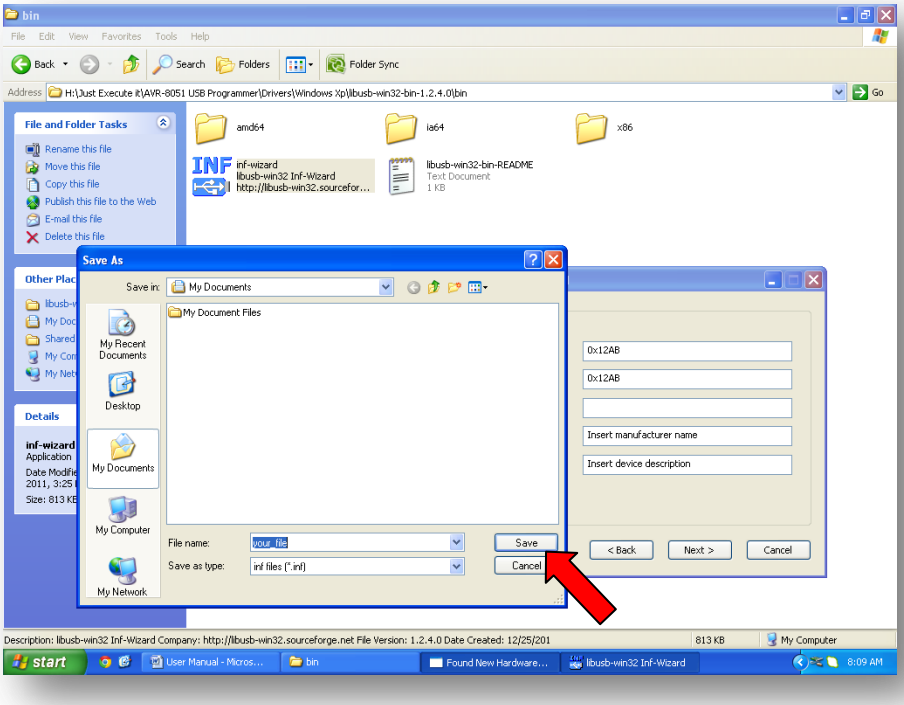

**Step 5:** Click on **Next**



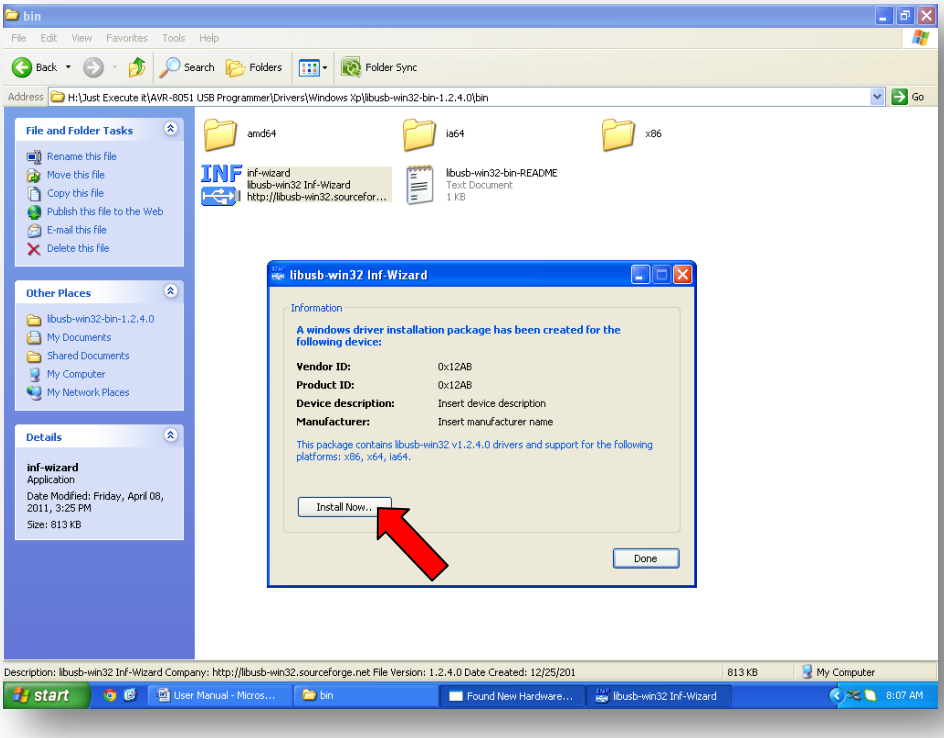
**Step 6: Fill up** the box as shown below and click **Next** (Mostly it will be automatically filled up)



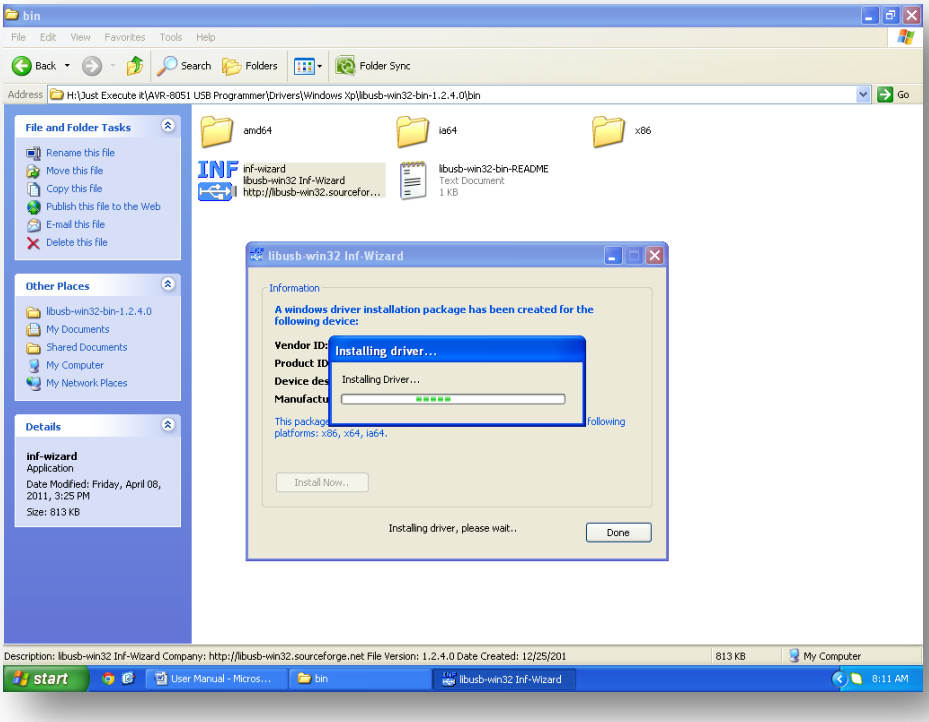

**Step 7**: Just click on **save**



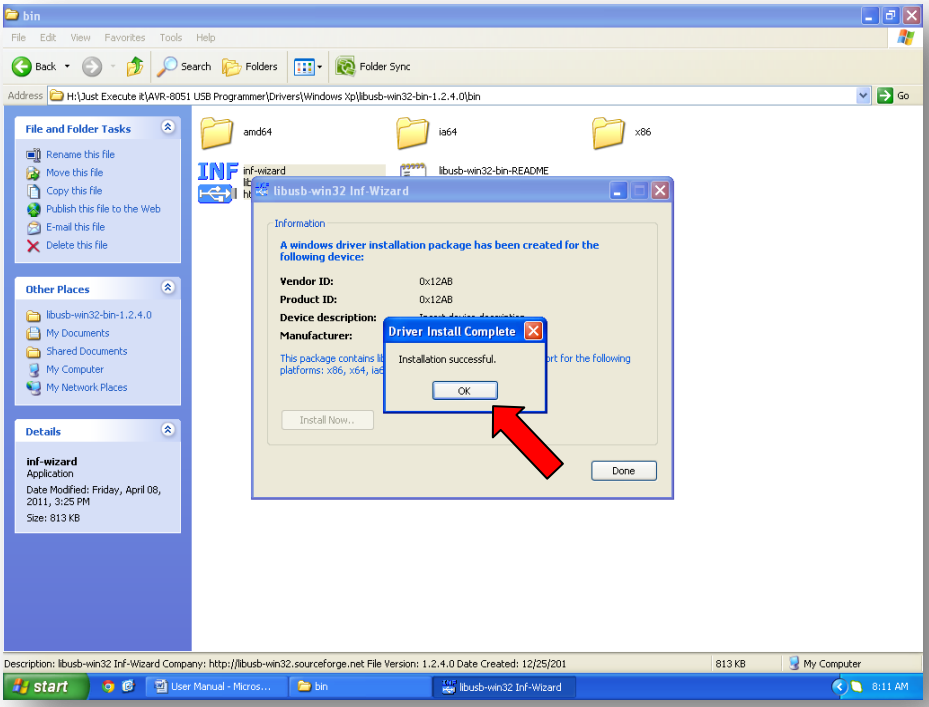
**Step 8:** Click on **Install Now**



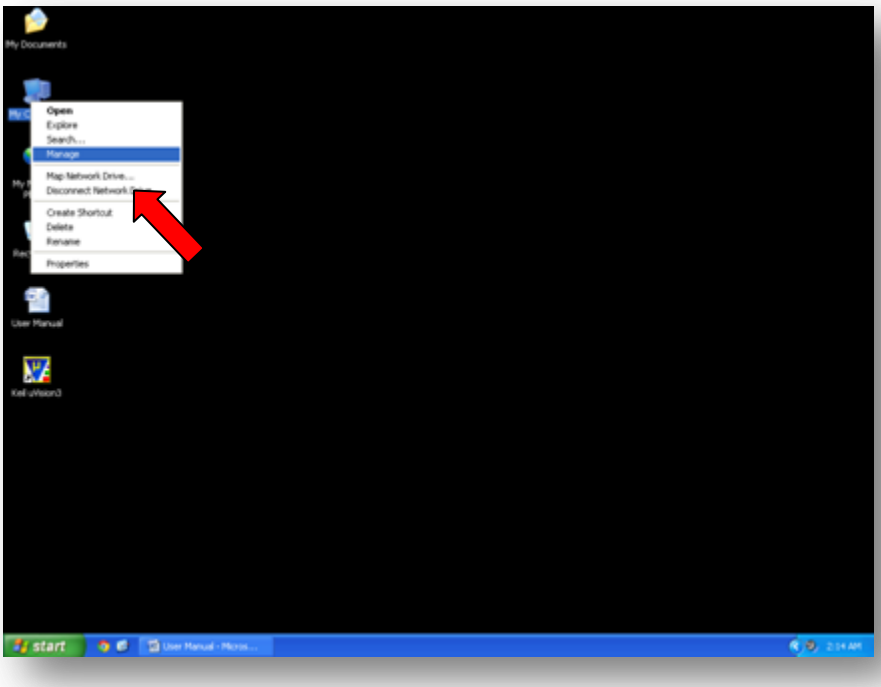

**Step9:** Wait for **Installation**



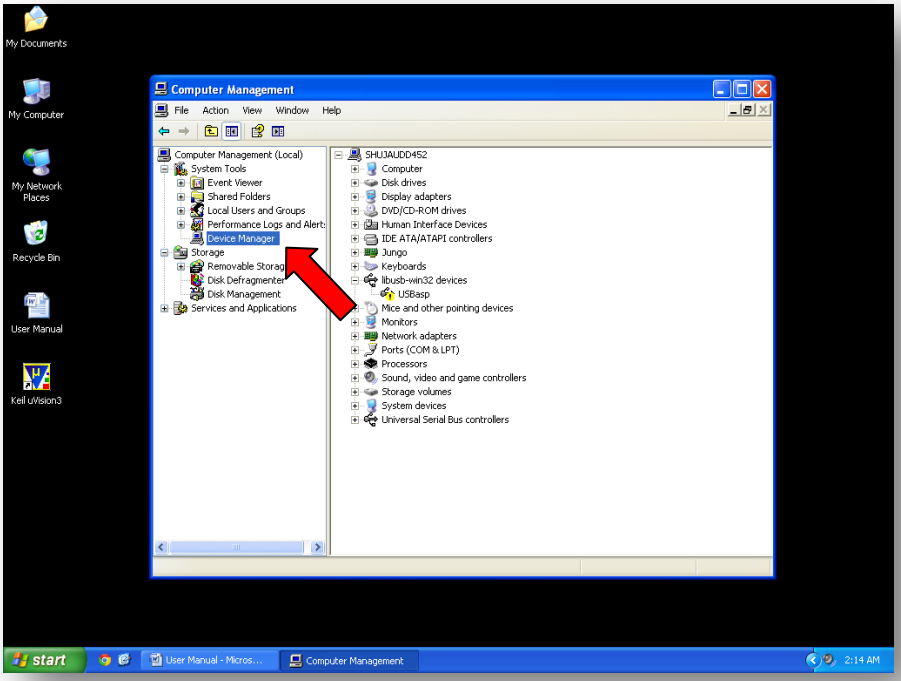
Step 10: Click on **OK**



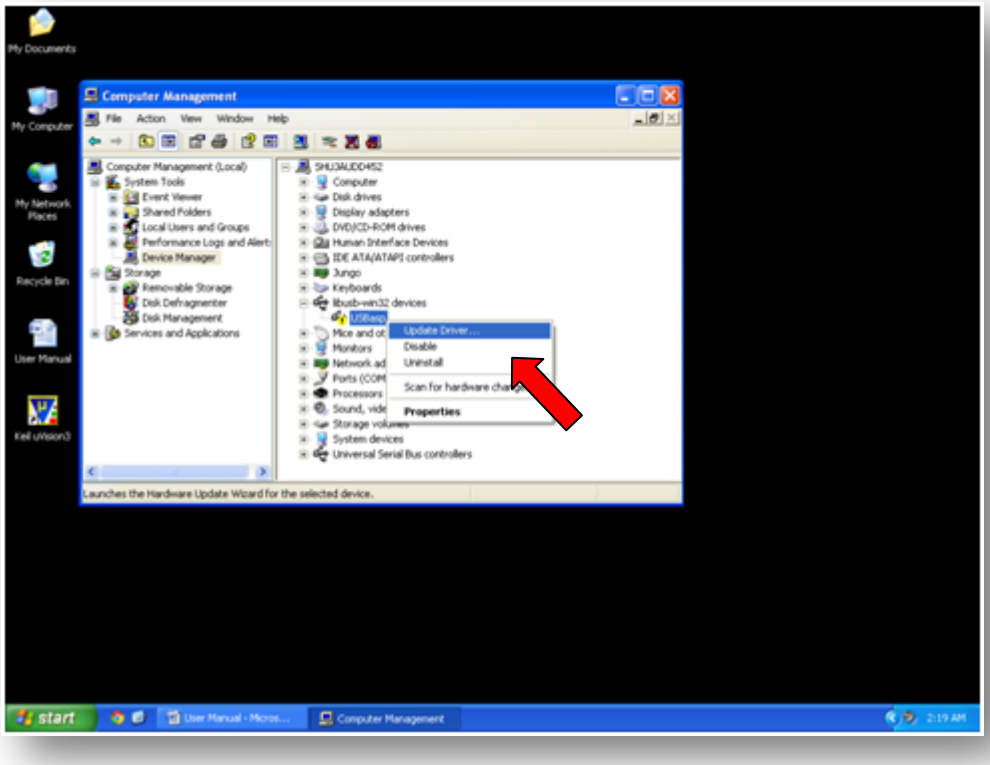

**Step 11:** Now, go to desktop screen and right click on **My computers** and select **Manage**



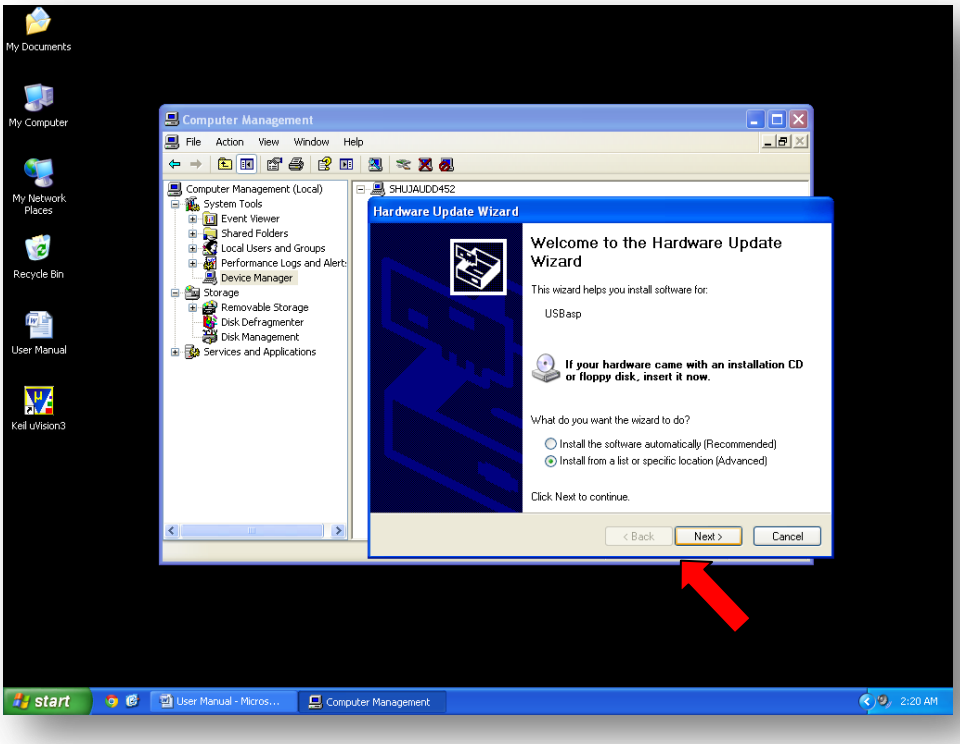
**Step 12:** Select **Device Manager**



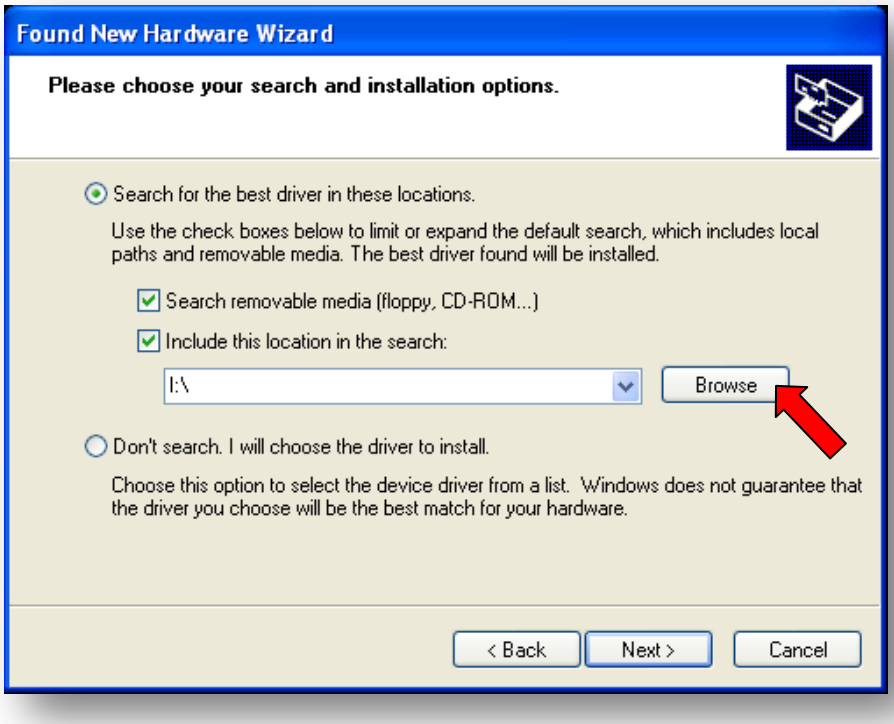

**Step13:** select **libusb-win32 device** and right click on **USBasp** then select **Update drivers**



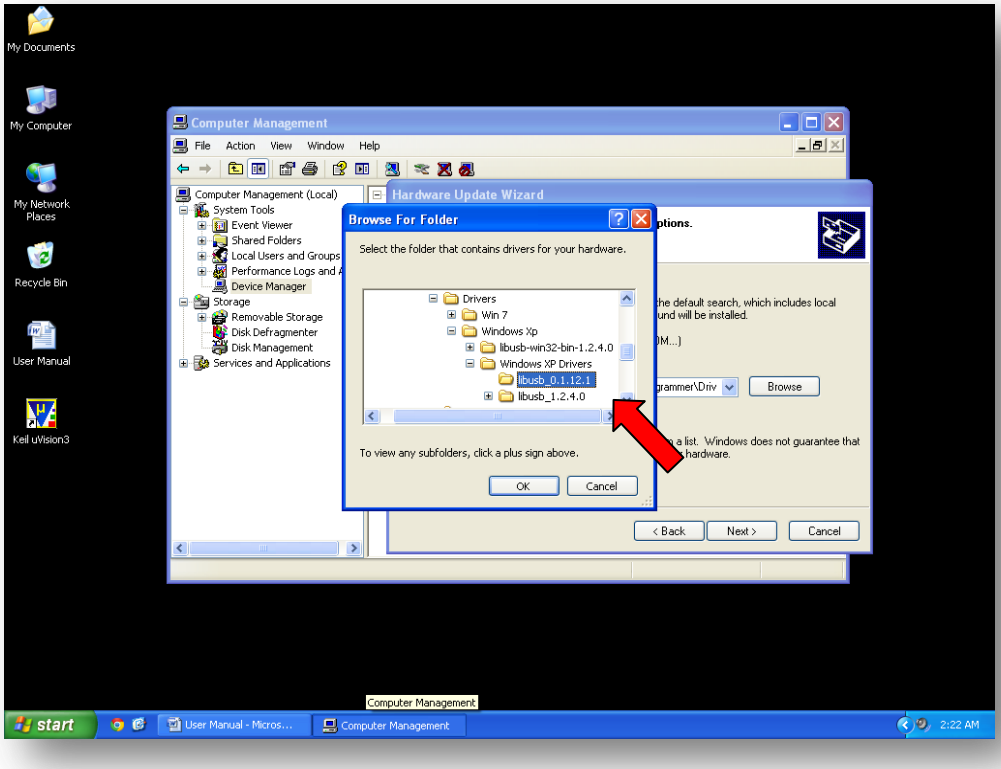
**Step 14:** Click on **NEXT**



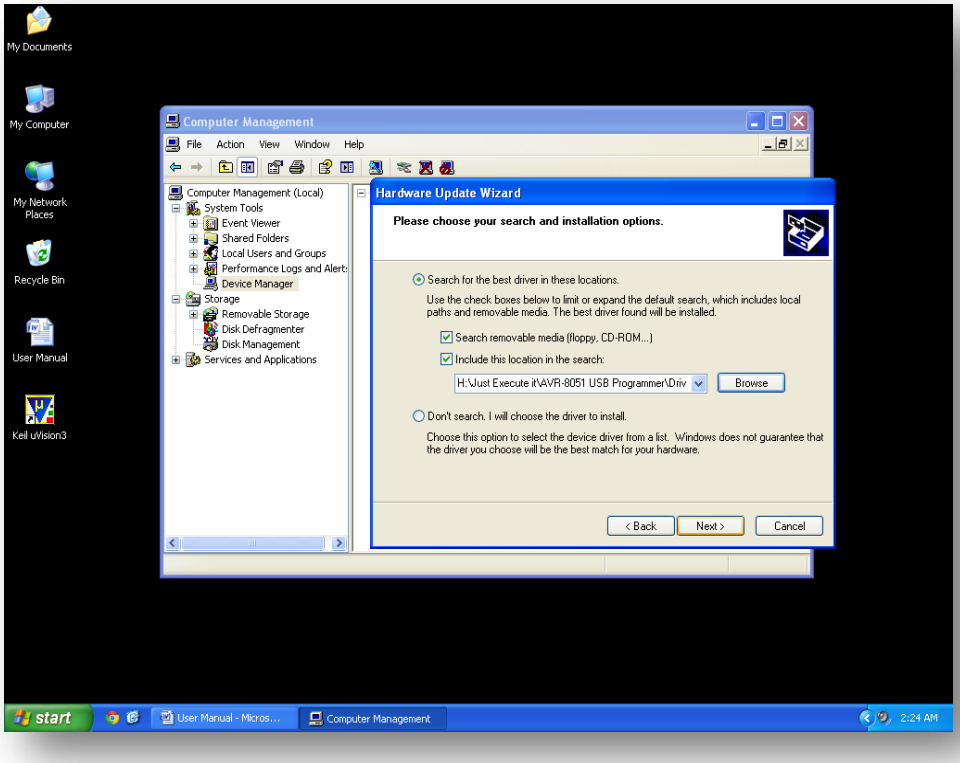

**Step 15:** Click on Brows and locate the **Windows Xp Drivers** Folder from the CD


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
I:\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

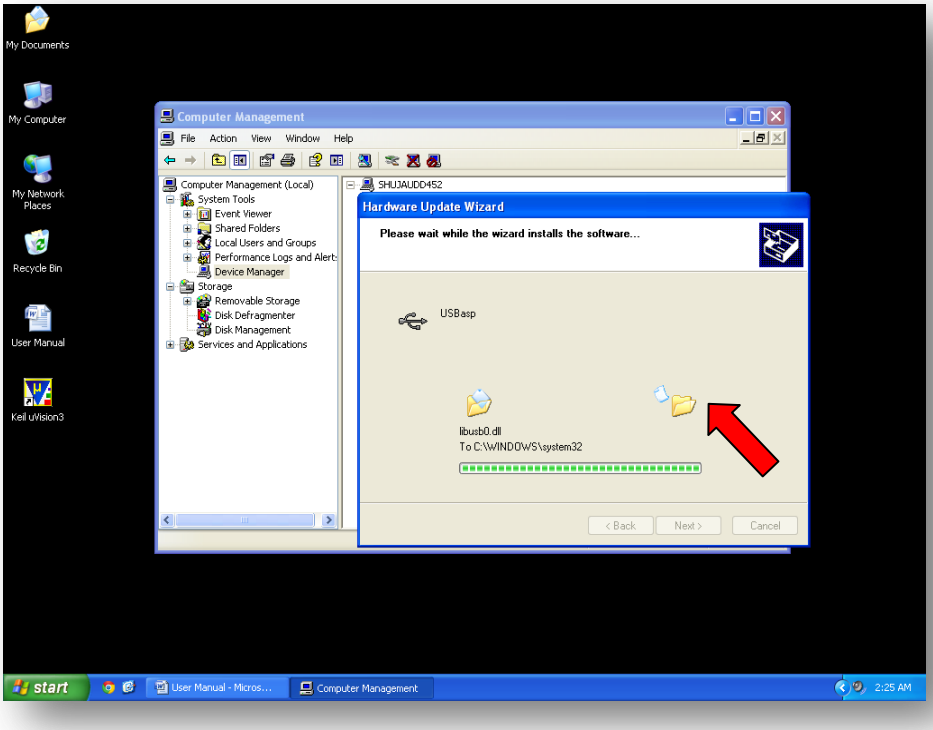
**Step 16:** Select **libusb_0.1.12.1** folder and click **Ok**



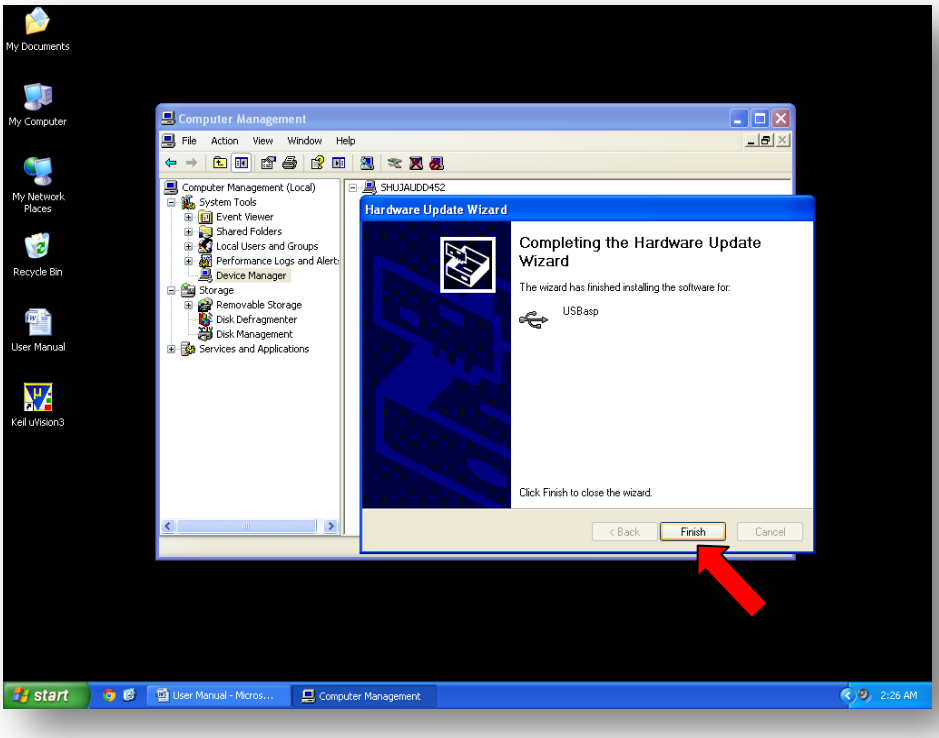

**Step 17: Click** Next


Computer Management
Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
H:\Just Execute it\AVR-8051 USB Programmer\Driv
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel
start
2:24 AM

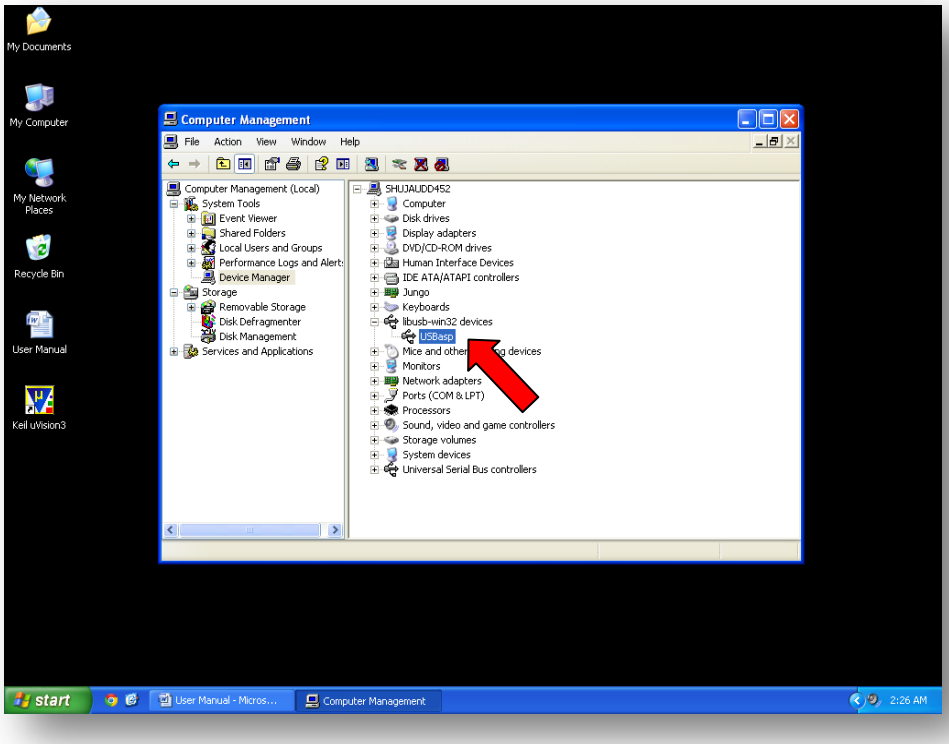
**Step 18: Wait** for Installation



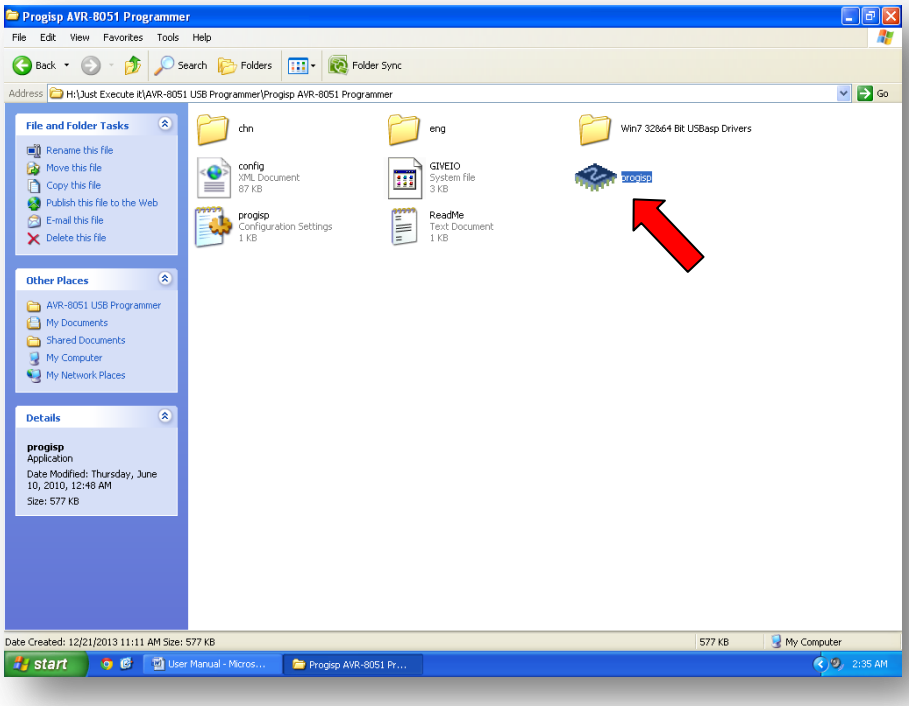

**Step 19:** Click on **Finish ,**this will complete the **Drivers installation for 8051/AVR USB Programmer**



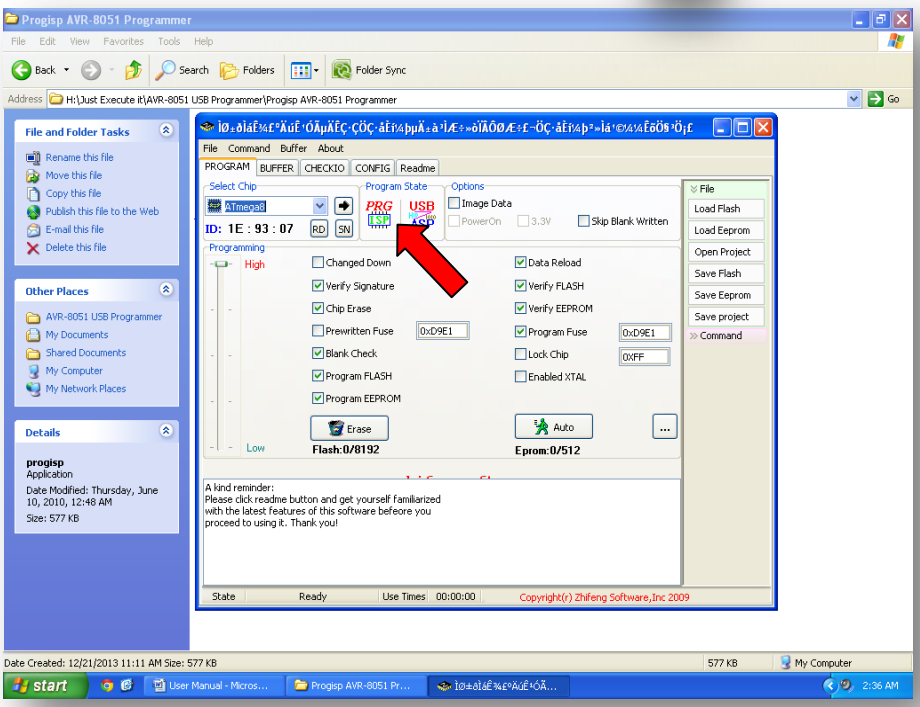
**Step 20:** Check an icon which will appear at right side of Device manager window as **"USBasp",** then close the window




**Step21:** Go to **Progisp AVR/8051 Programmer** Folder Present in CD and open **Progisp**



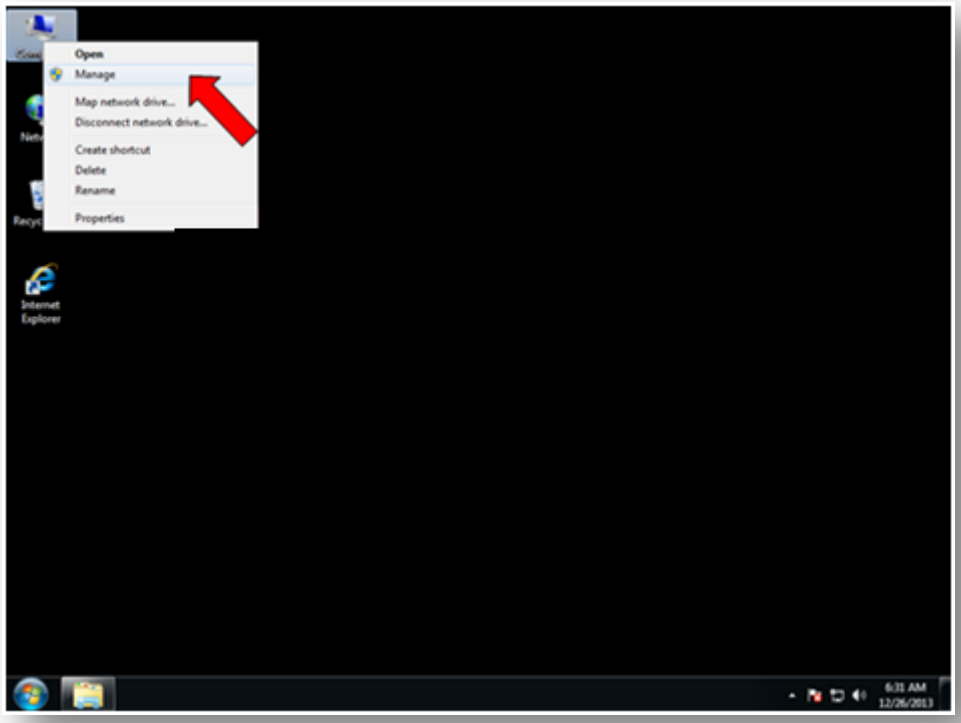
**Step 22:** check the **programming state** enabled as,

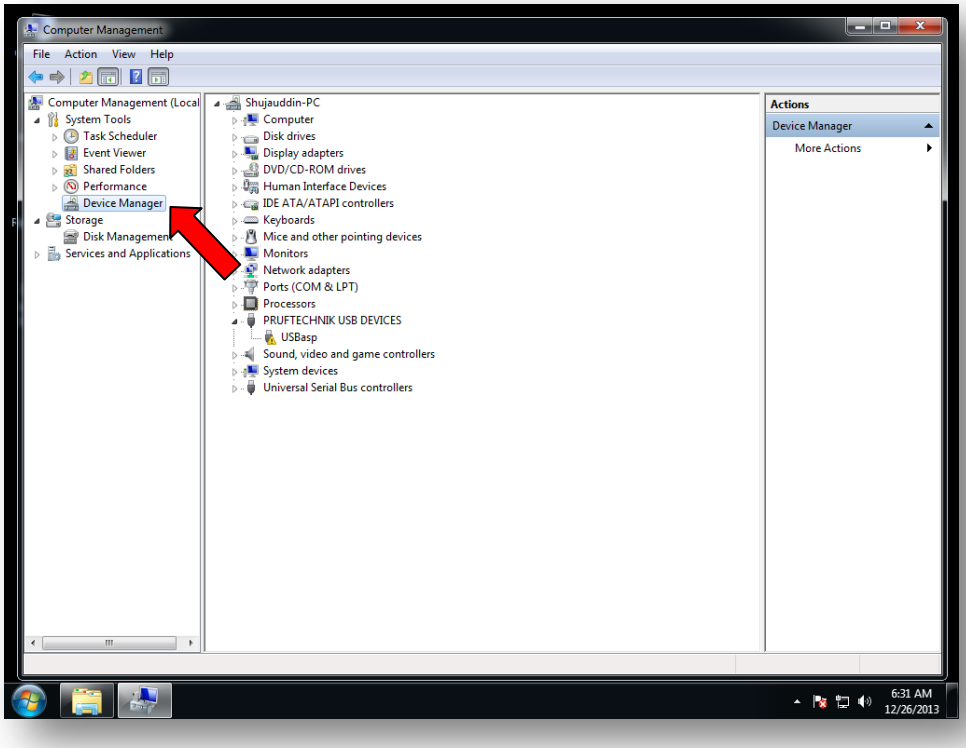

## 4.2.2. Guidelines for Win-7 Operating System Users

**Step1:** After connecting USB Programmer into PC you will get a pop up as **"Installing Device Driver Software"** as shown in the image below

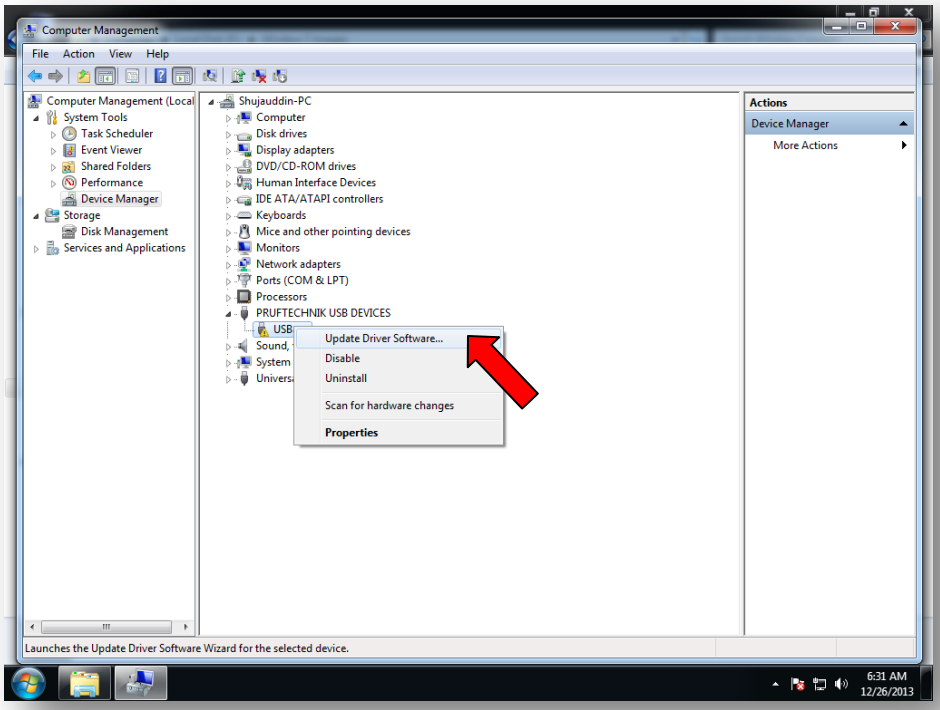
**Step 2:** Go to the **desktop screen** then right click on **My computer** and select **Mange**



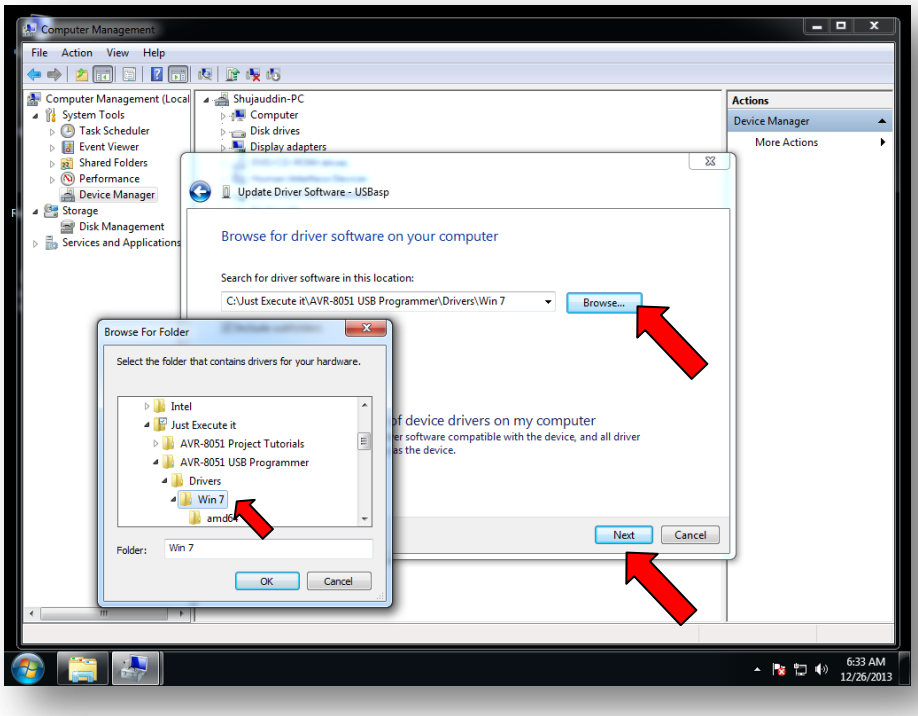

**Step 3:** Click on **Device Manager**



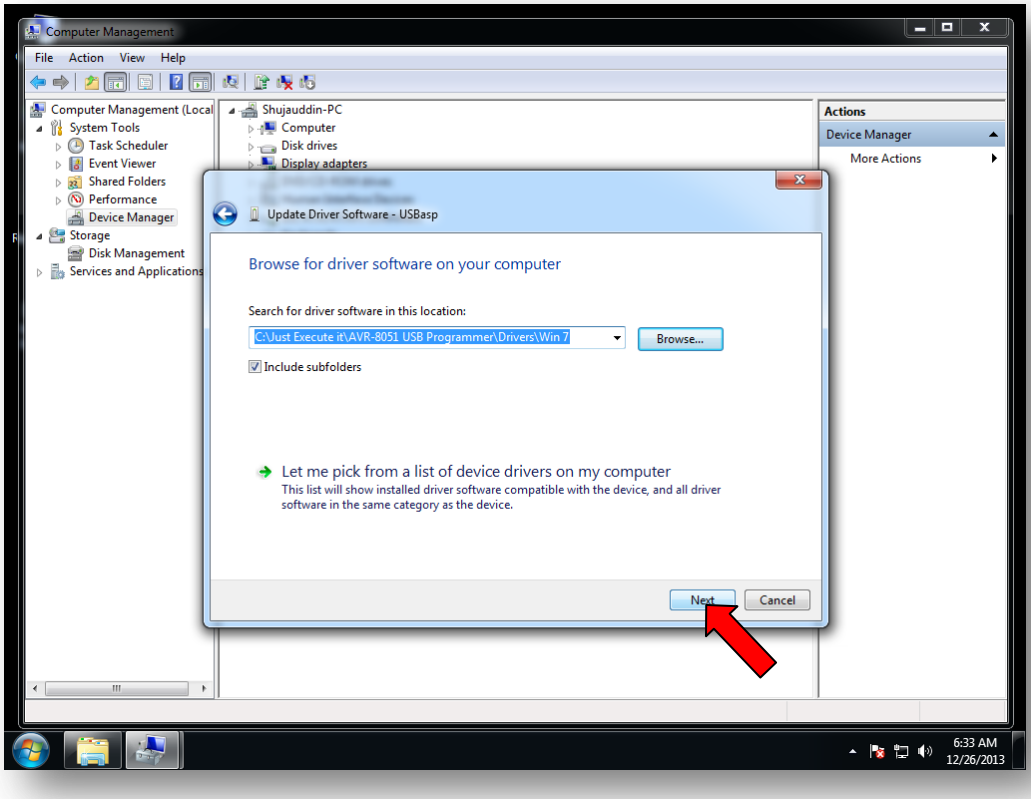
**Step 4**: Select **PRUFTSCHNIK USB DEVICE** and right click on **USBasp** then select **Update Driver Software**



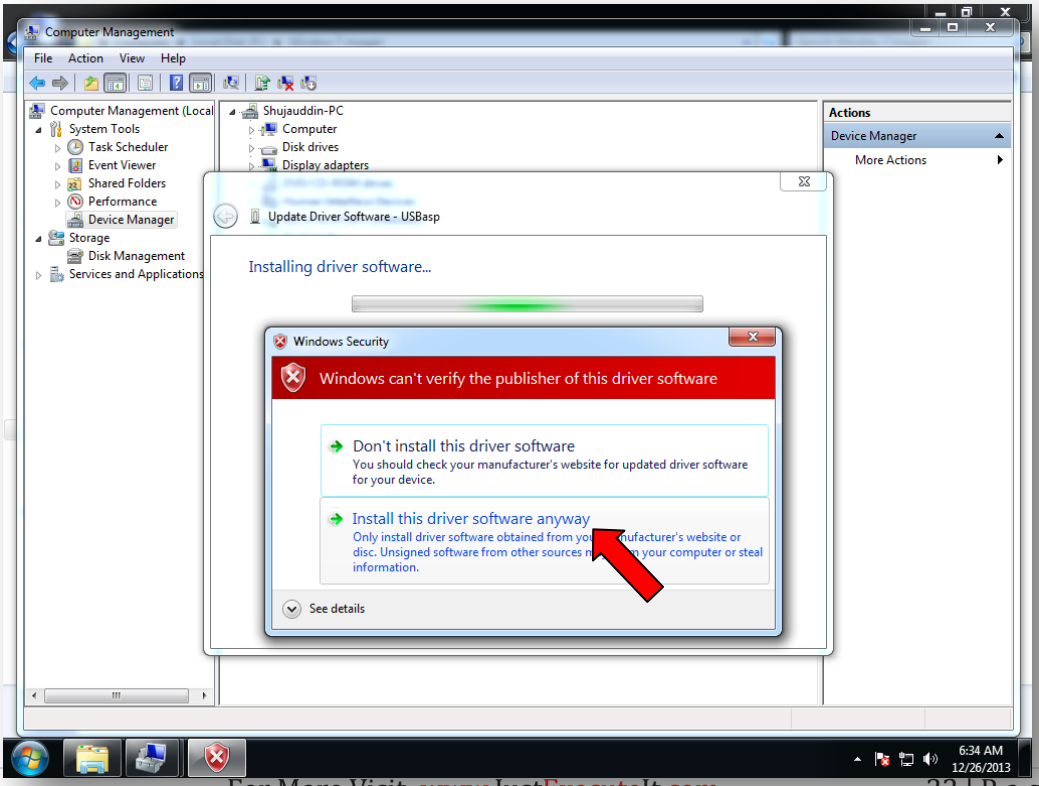

**Step 5:** Click on **Brows** and locate the **Win 7** Folder from the **CD,** then click **ok**



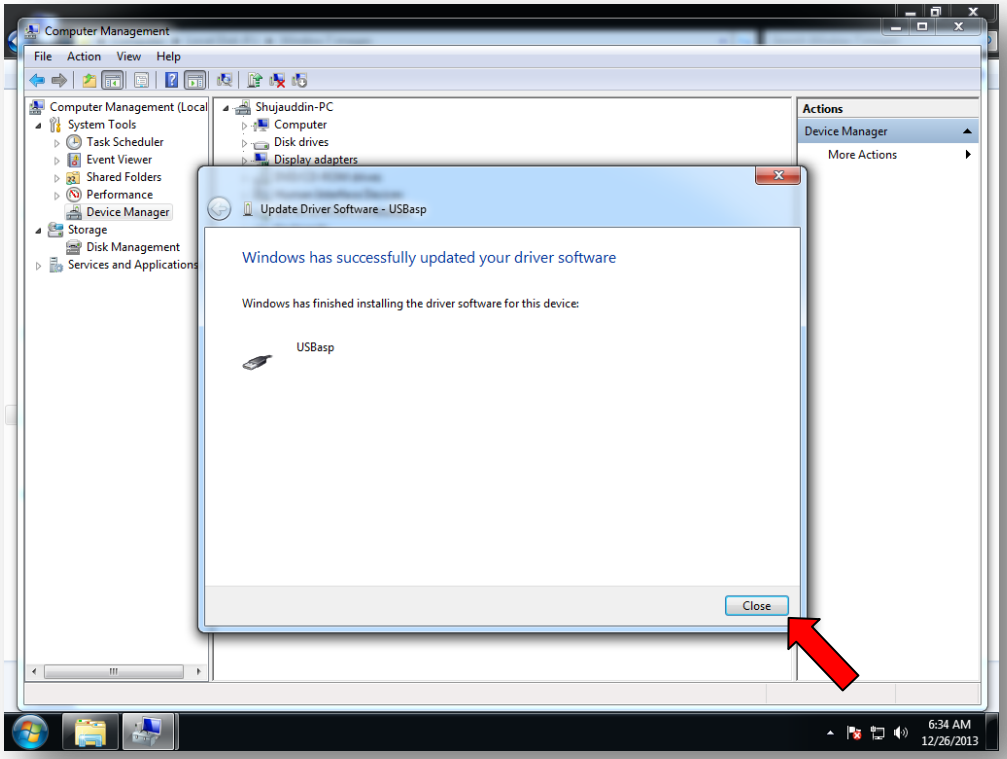
**Step 6**: Click on **Next**



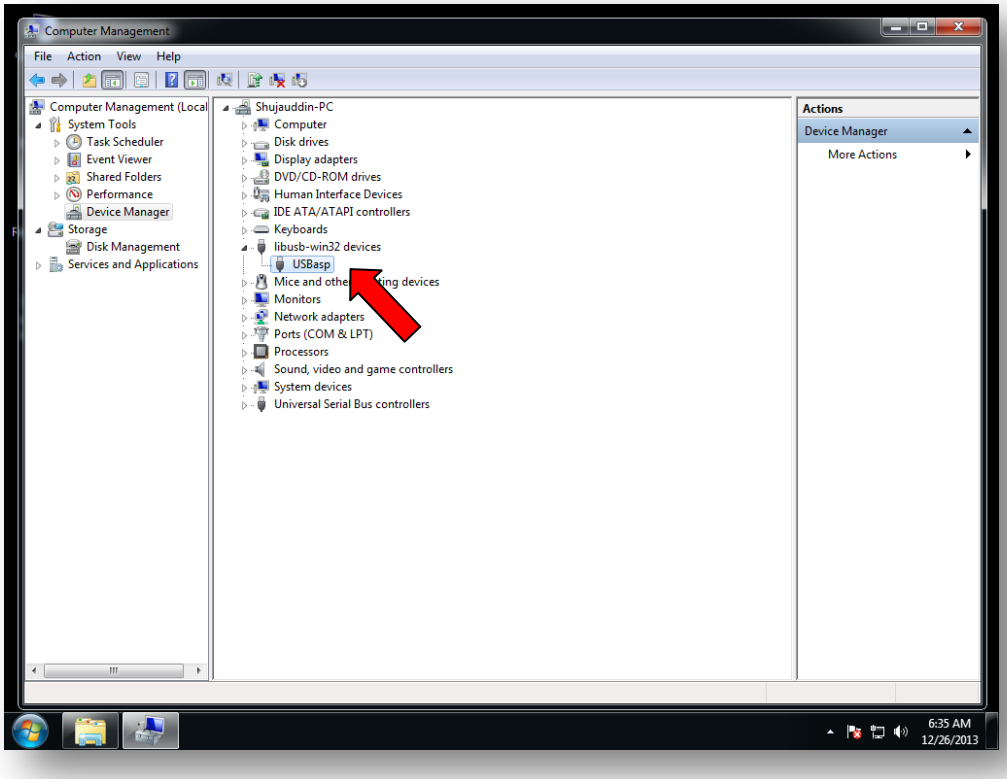

**Step 7:** Click on **"Install this driver software any way "**



**Step 8**: This will install the driver successfully, and then click on **Close**

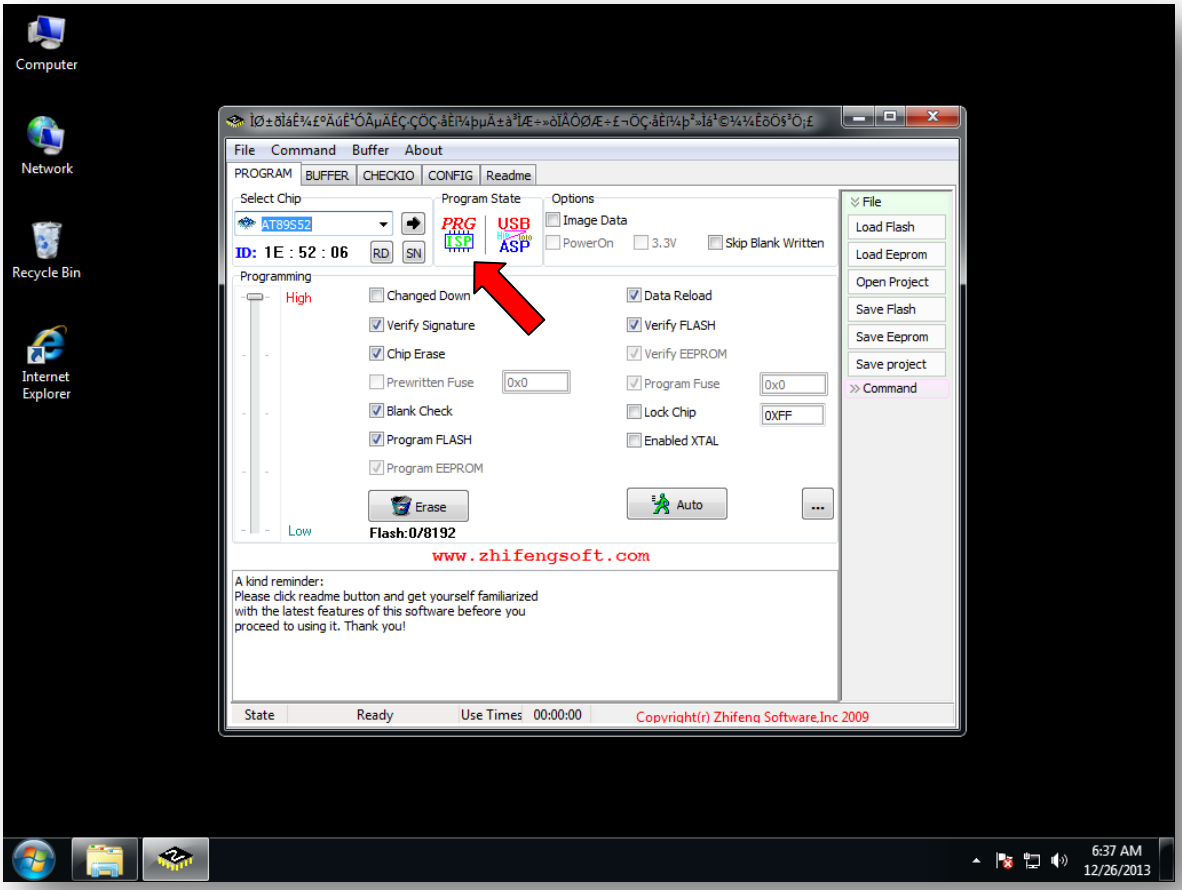



**Step 9:** Now click the status at the device manger as "**libusb 32-devices** "



**Step 10:** Check the **programming state** enabled as,

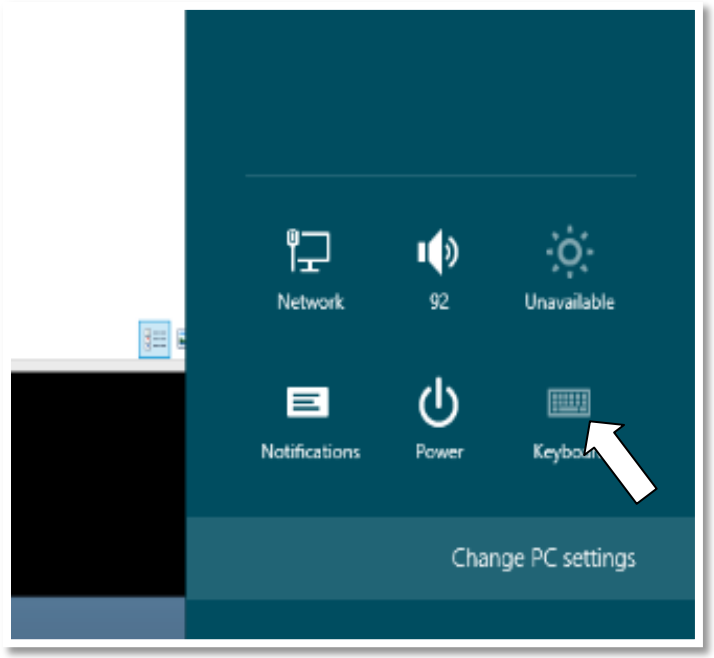
with this you have finished the complete installation of AVR/8051 USB Programmer. (Next let's see how to dump a hex file into Microcontroller)



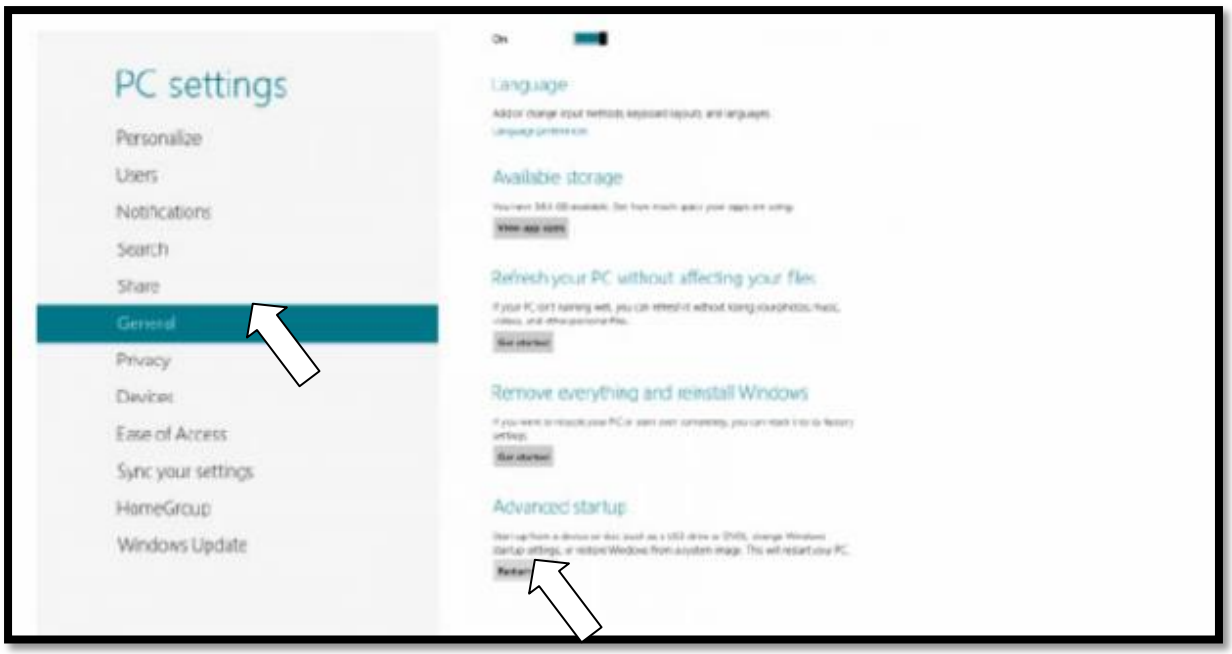
### 4.2.3. Guidelines for Win-8.0 Operating System Users

1) Move the cursor over the top or bottom right corner or the screen and it will show extra options on the right side of the screen. Choose the **Settings** option (icon looks like a Gear).

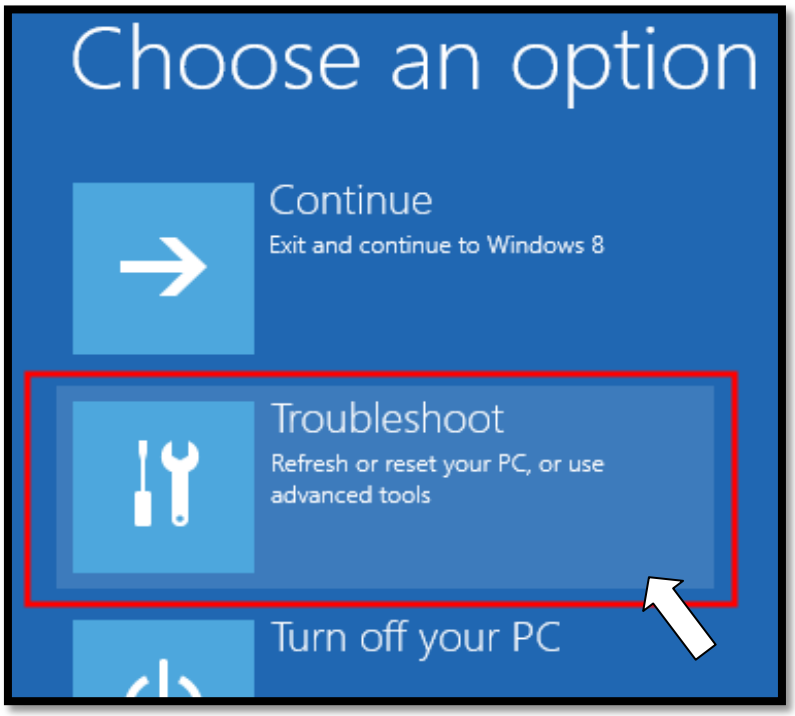
2) After this chose **'Change PC Settings'**



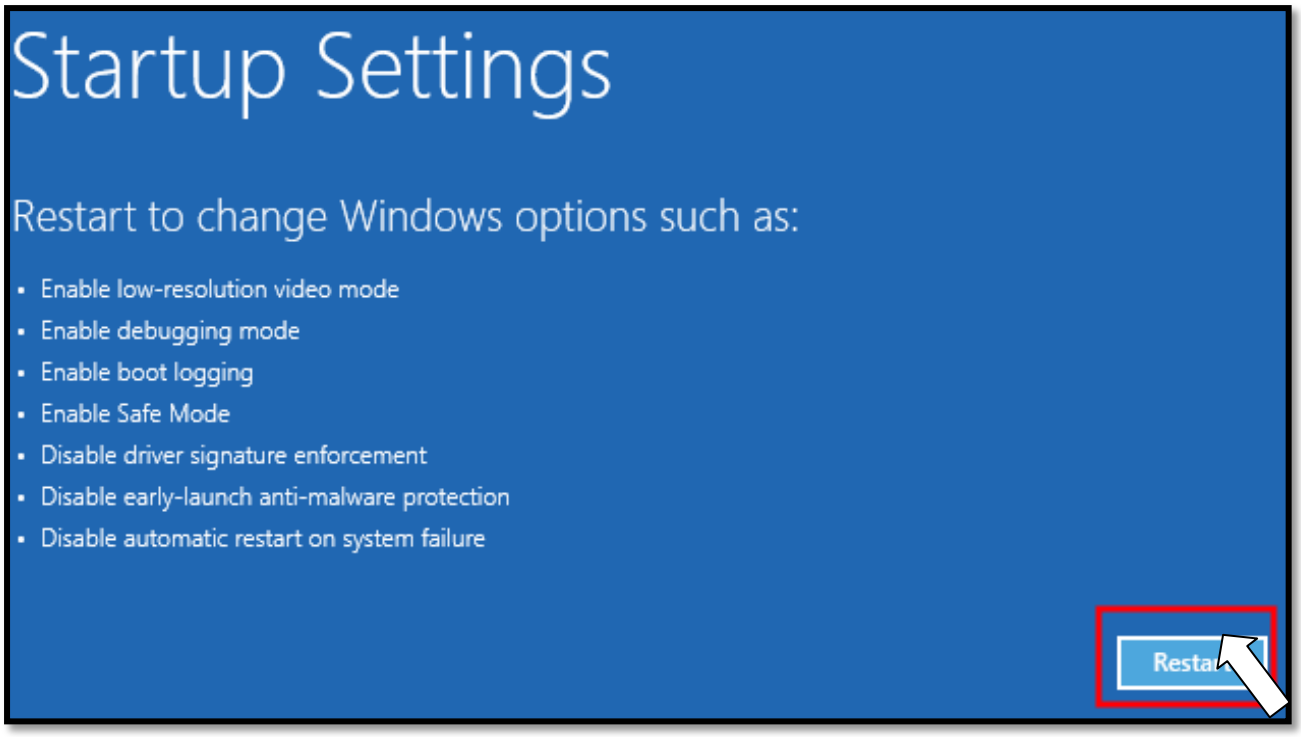

3) Choose **'General**' in the left menu and click on the **'Restart Now'** which is present under '**Advance Startup'** Options at the bottom right side.



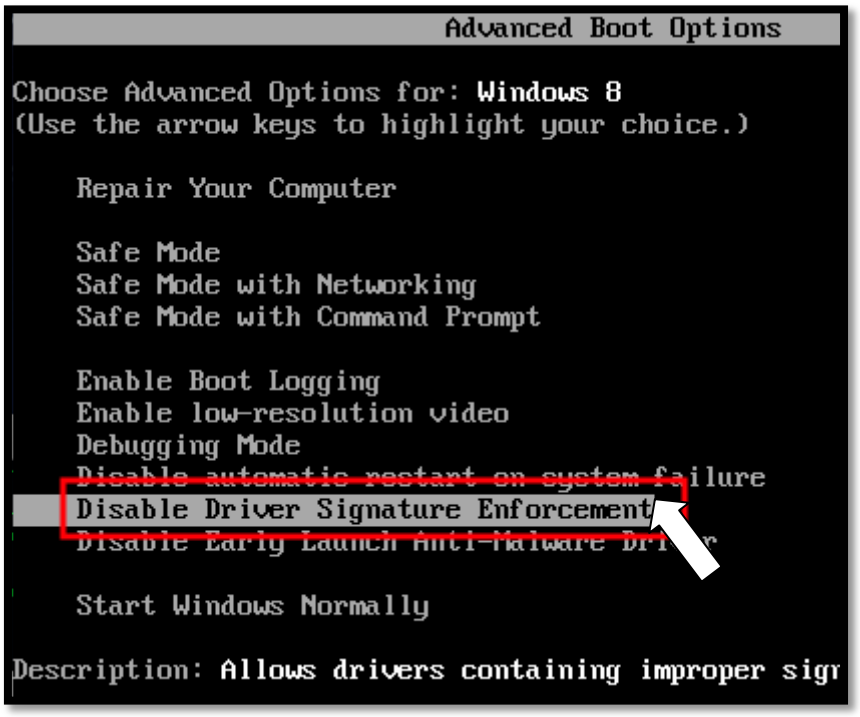

4) Select **'Troubleshoot**


Choose an option
Continue
Exit and continue to Windows 8
Troubleshoot
Refresh or reset your PC, or use advanced tools
Turn off your PC

5) Then select **'Advanced options'** and then **'Startup Settings'**. After this you will see something like this-

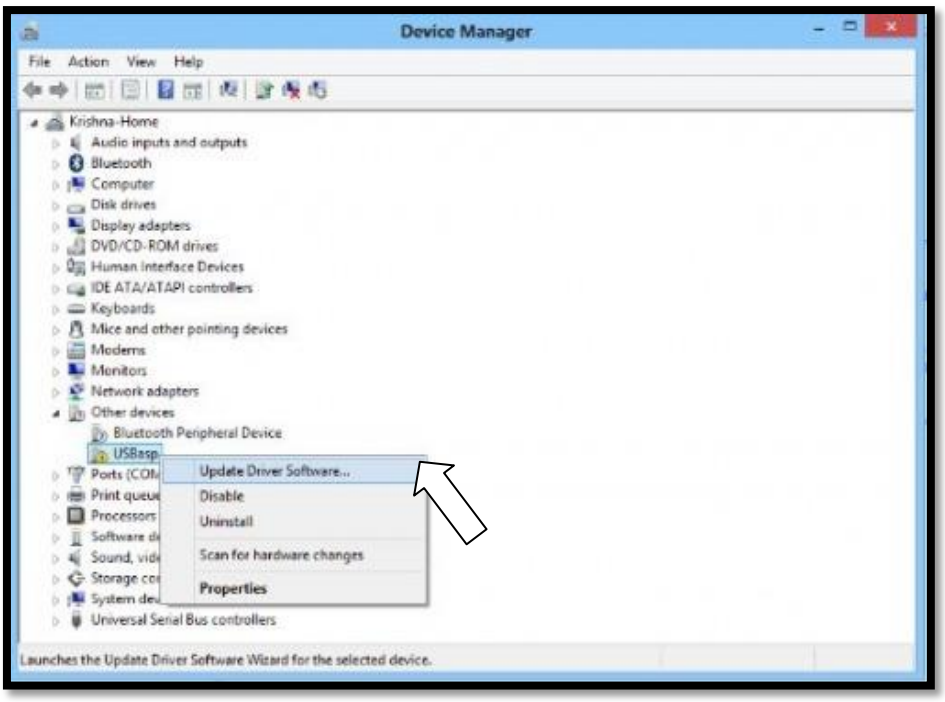



6) Choose **'Disable Driver Signature Enforcement'** and hit the **Enter key** to start Windows.

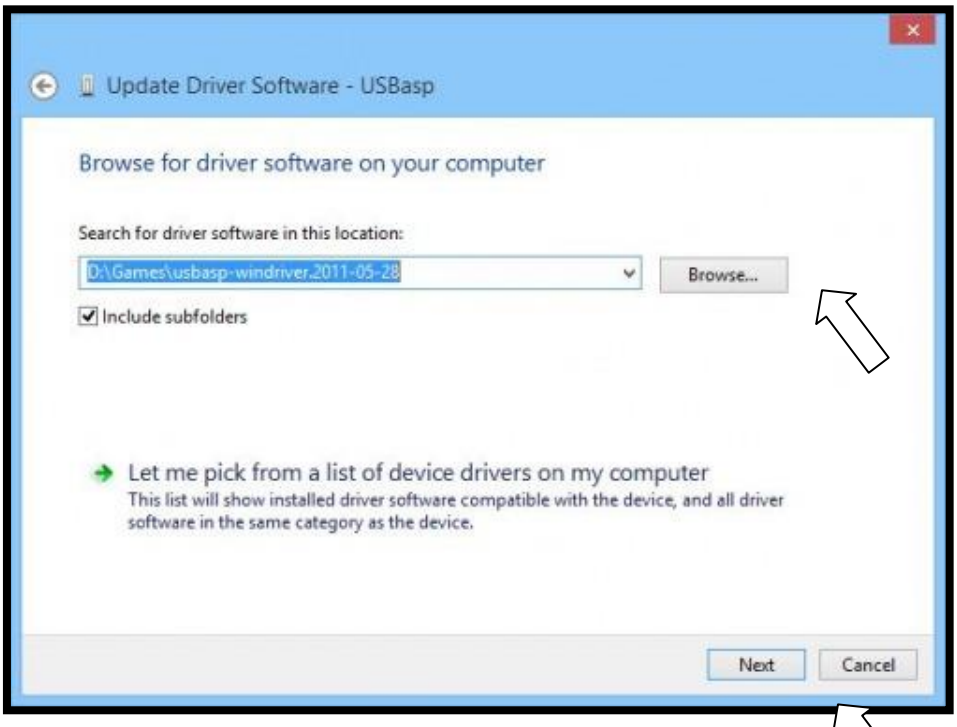

Advanced Boot Options
Choose Advanced Options for: Windows 8
(Use the arrow keys to highlight your choice.)
Repair Your Computer
Safe Mode
Safe Mode with Networking
Safe Mode with Command Prompt
Enable Boot Logging
Enable low-resolution video
Debugging Mode
Disable automatic restart on system failure
Disable Driver Signature Enforcement
Disable Early Launch Anti-Malware Dri r
Start Windows Normally
Description: Allows drivers containing improper sigr

7) Now connect your USBasp programmer to the USB port of your PC/laptop. Ignore the message that 'Device driver software was not successfully installed'.

8) Take USBasp drivers from CD . Go to **Device Manager** in control Panel and you will find 'LibUSB-Win32 Devices'. Click on it and select **'Update Driver Software**...'



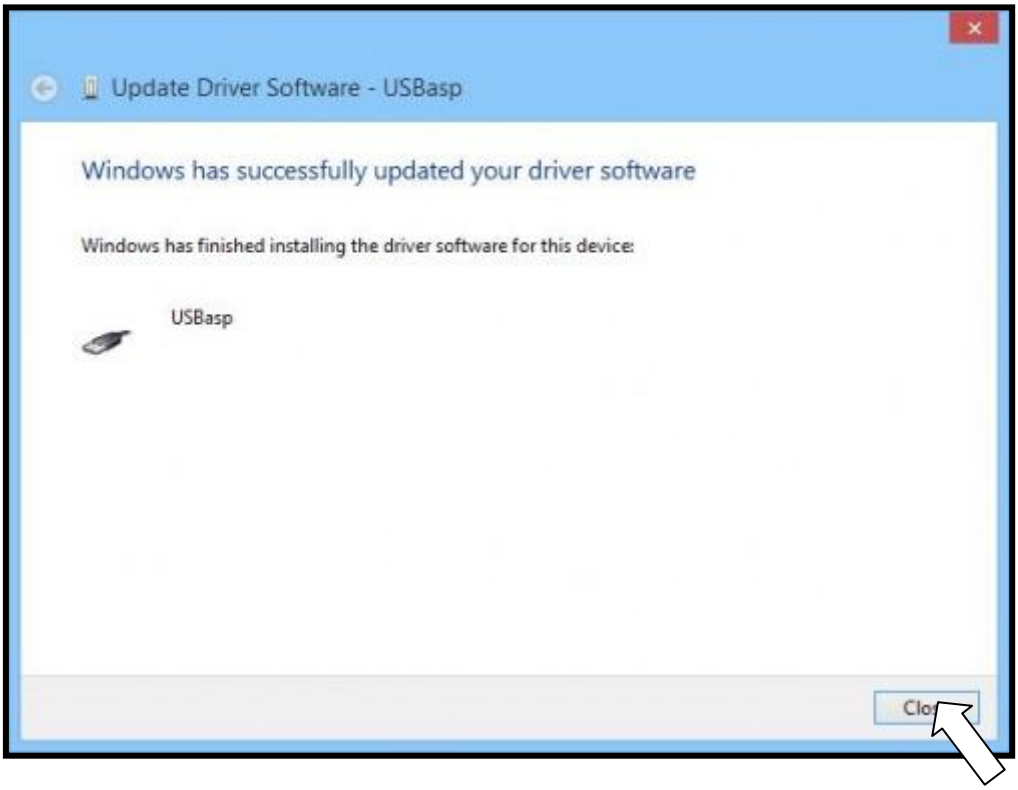

9) Select 'Browse my computer for driver software'. After this browse to the location where you have extracted the USBasp drivers


Update Driver Software - USBasp
Browse for driver software on your computer
Search for driver software in this location:
D:\Games\usbasp-windriver.2011-05-28
Browse...
Include subfolders
Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
Next
Cancel

10) Click next and ignore the security warning 'Windows can't verify the publisher of this driver software' and select 'Install this driver software anyway'

Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may ha
our computer or steal information.
See details

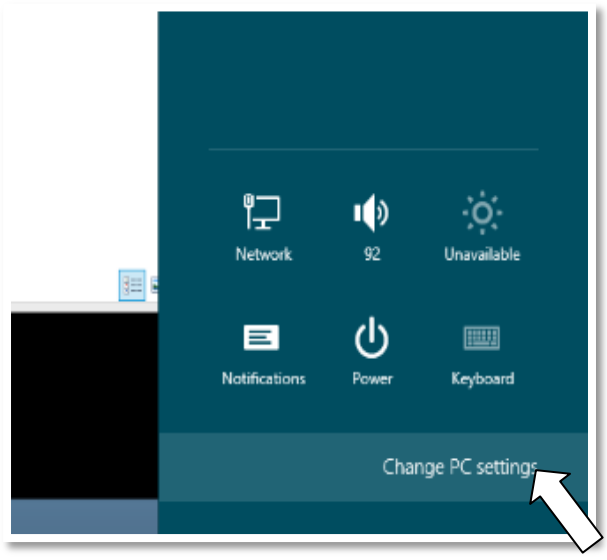
11)Woot! if everything goes alright you will see something like this -


Update Driver Software - USBasp
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
USBasp

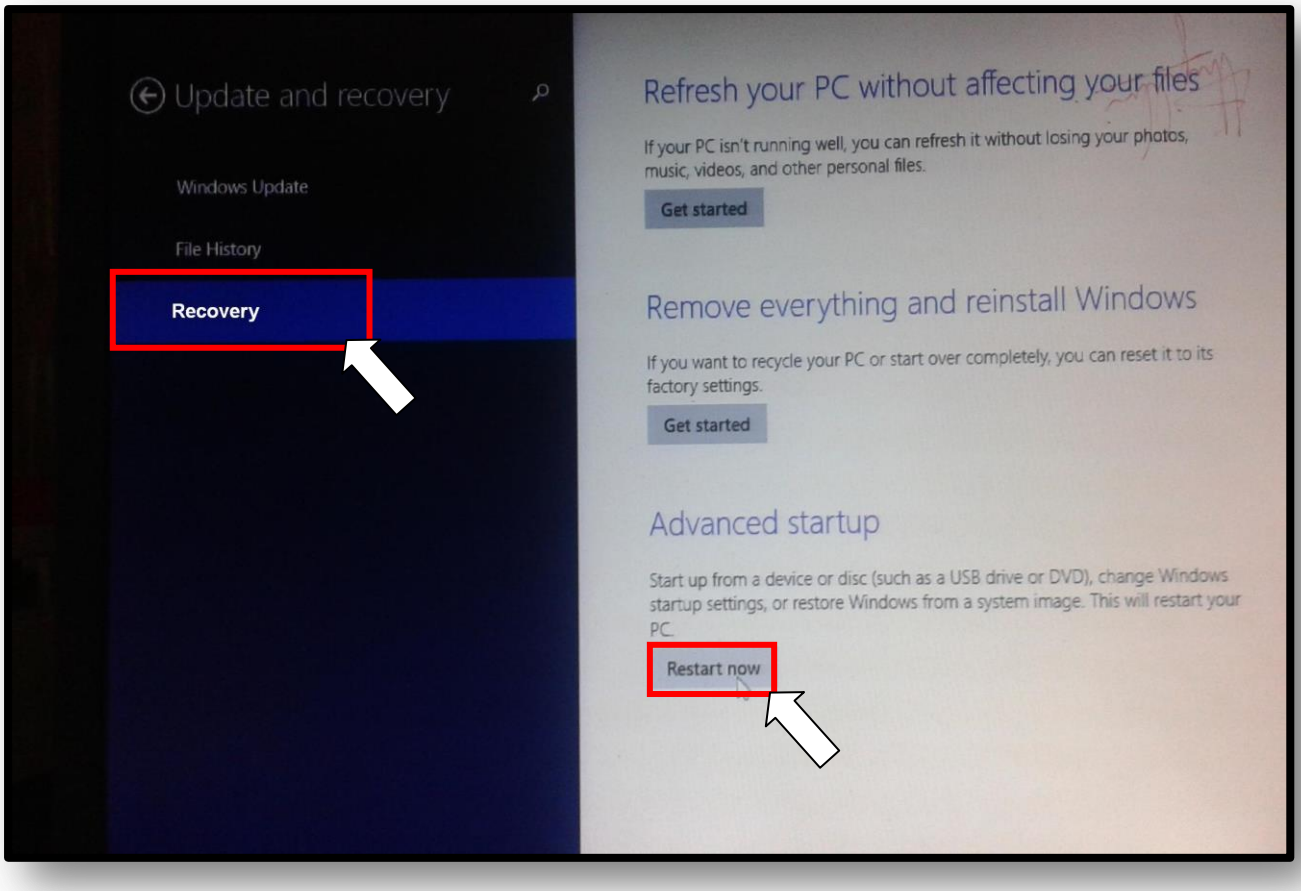
### 4.2.4. Guidelines for Win-8.1 Operating System Users

1) Move the cursor over the top or bottom right corner or the screen and it will show extra options on the right side of the screen. Choose the **Settings** option (icon looks like a Gear).

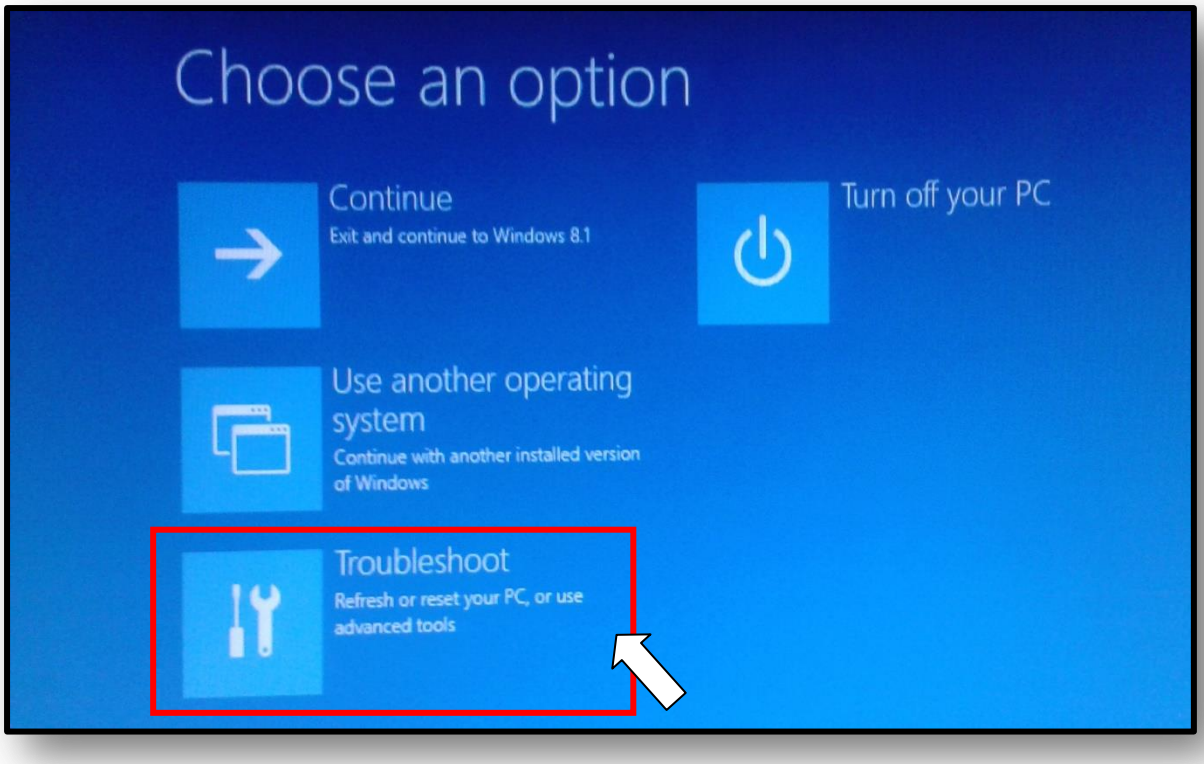
2) After this chose **'Change PC Settings'**




3) Choose **'Recovery**' in the left menu and click on the **'Restart Now'** which is present under '**Advance Startup'** Options at the bottom right side.


Update and recovery
Windows Update
File History
Recovery
Refresh your PC without affecting your files
If your PC isn't running well, you can refresh it without losing your photos, music, videos, and other personal files.
Get started
Remove everything and reinstall Windows
If you want to recycle your PC or start over completely, you can reset it to its factory settings.
Get started
Advanced startup
Start up from a device or disc (such as a USB drive or DVD), change Windows startup settings, or restore Windows from a system image. This will restart your PC.
Restart now

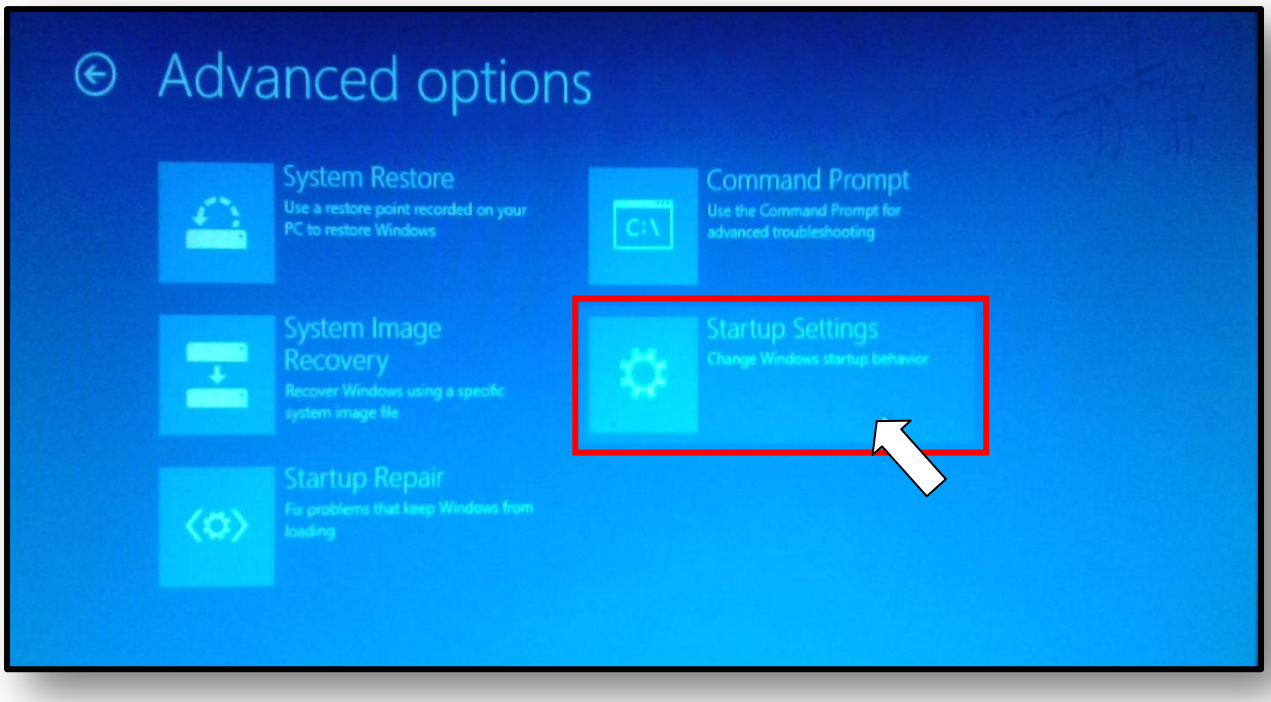
4) Choose **'Troubleshoot'** Option


Choose an option
Continue
Exit and continue to Windows 8.1
Turn off your PC
Use another operating system
Continue with another installed version of Windows
Troubleshoot
Refresh or reset your PC, or use advanced tools

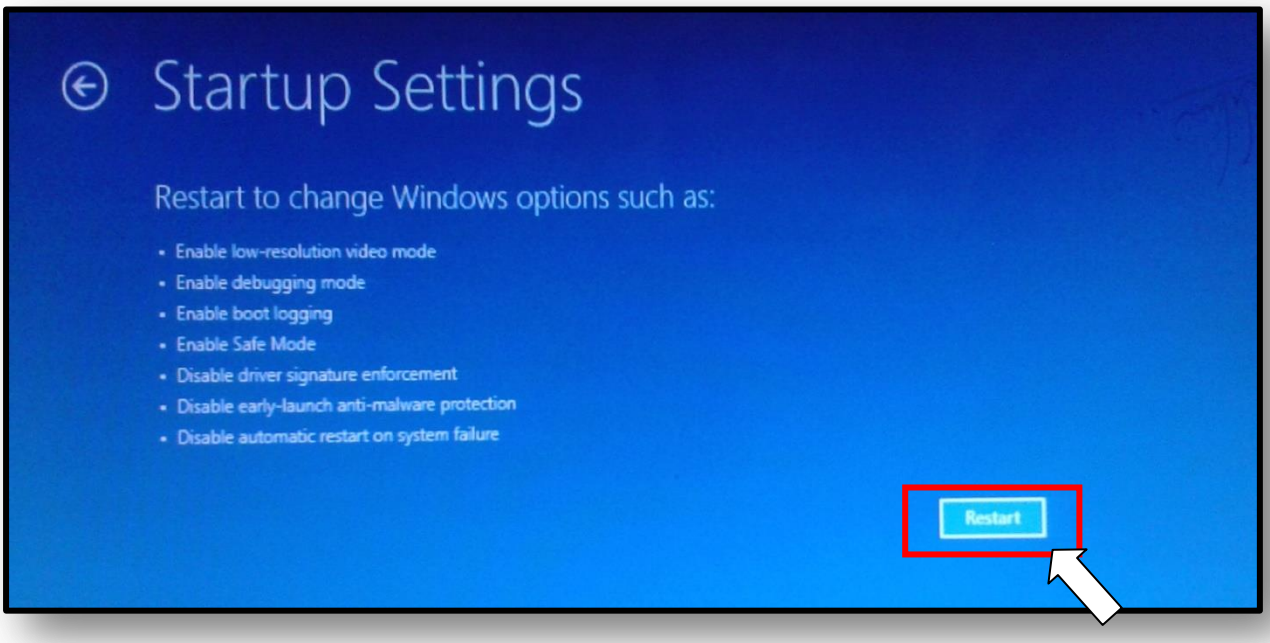
5) Click on **'Advance Option'**

Troubleshoot
Refresh your PC
If your PC isn't running well, you can refresh it without losing your files
Reset your PC
If you want to remove all of your files, you can reset your PC completely
Advanced options

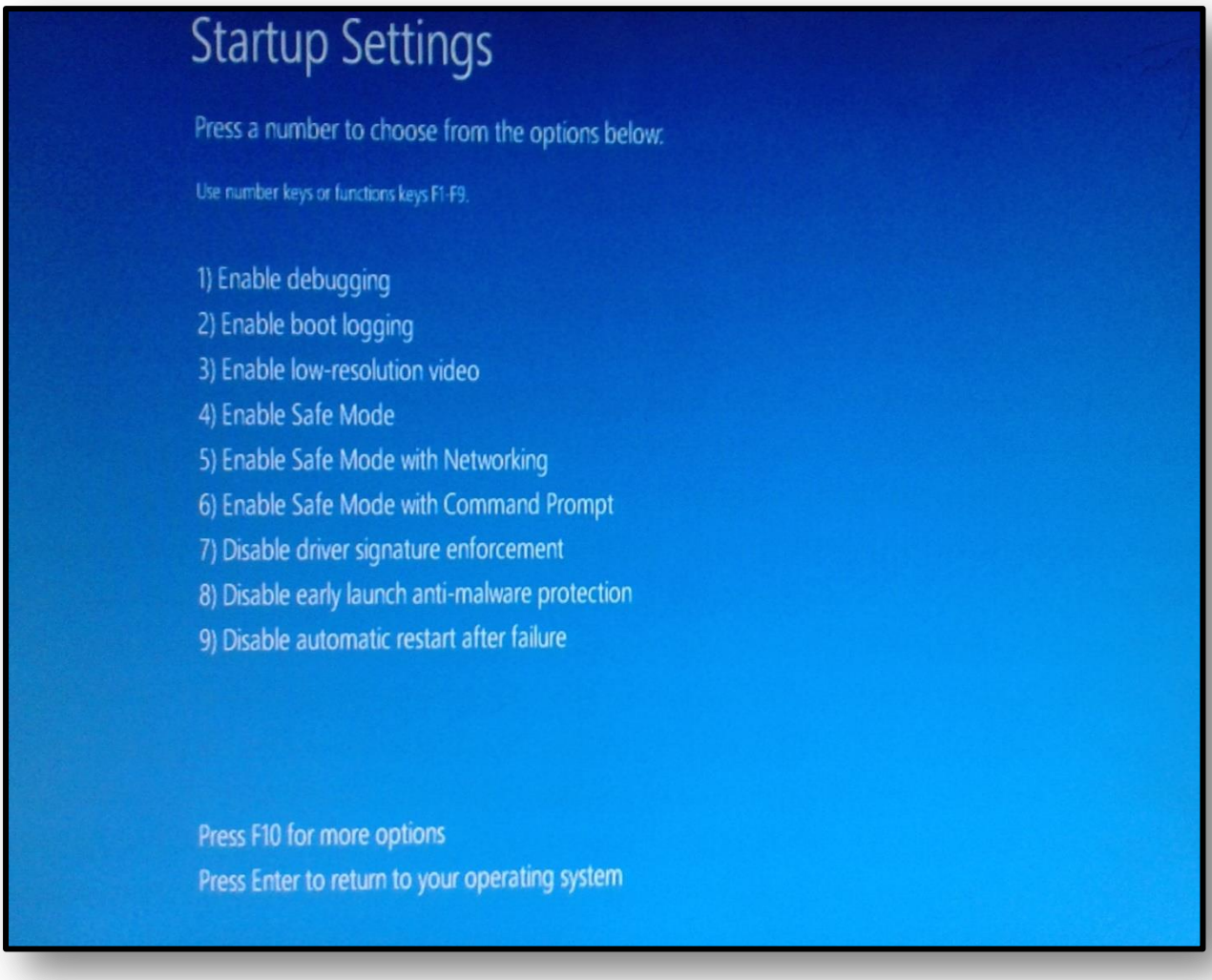
6) Select **'Startup Settings'**


Advanced options
System Restore
Use a restore point recorded on your PC to restore Windows
Command Prompt
Use the Command Prompt for advanced troubleshooting
System Image Recovery
Recover Windows using a specific system image file
Startup Settings
Change Windows startup behavior
Startup Repair
Fix problems that keep Windows from loading

7) Click on **Restart** Button

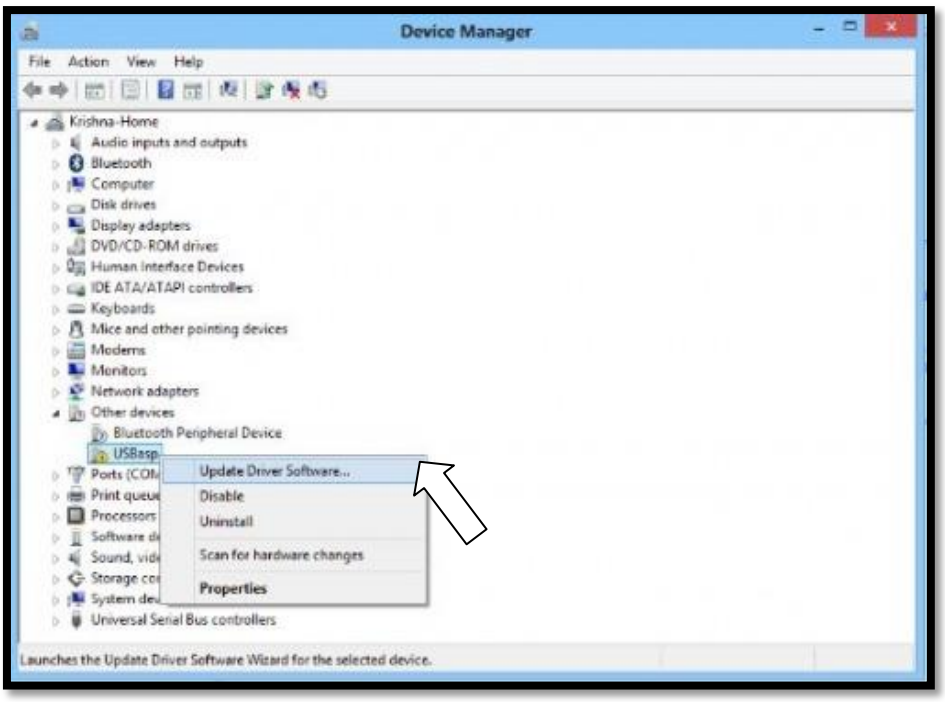


8) Press **'F7'** from the Keyboard, and wait until system Opens

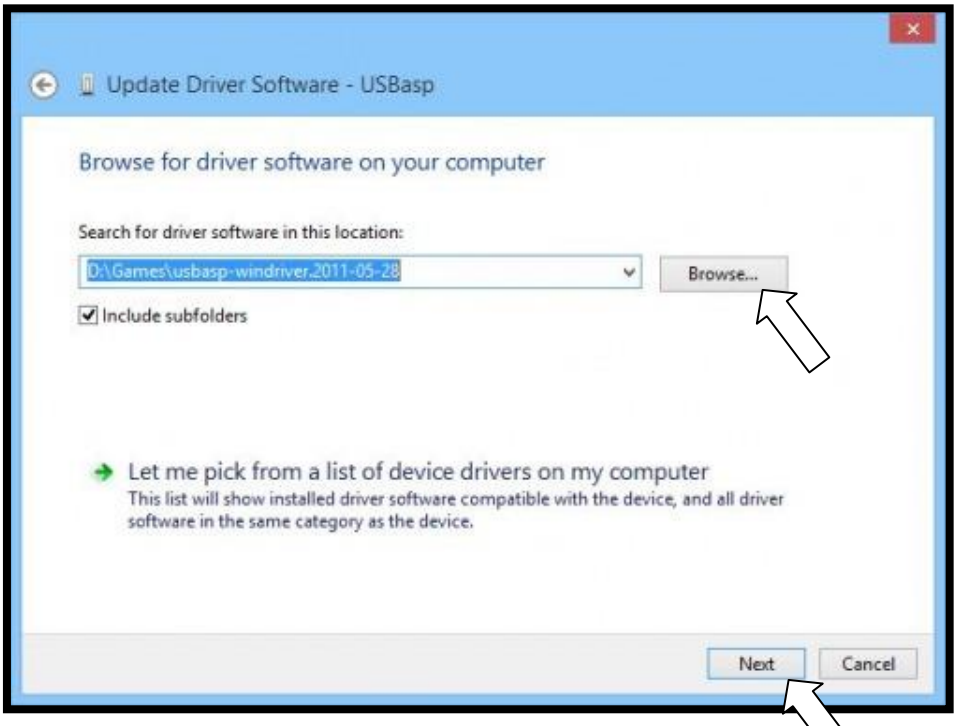

Startup Settings
Press a number to choose from the options below:
Use number keys or functions keys F1-F9.
1) Enable debugging
2) Enable boot logging
3) Enable low-resolution video
4) Enable Safe Mode
5) Enable Safe Mode with Networking
6) Enable Safe Mode with Command Prompt
7) Disable driver signature enforcement
8) Disable early launch anti-malware protection
9) Disable automatic restart after failure
Press F10 for more options
Press Enter to return to your operating system

9) Now connect your USBasp programmer to the USB port of your PC/laptop. Ignore the message that 'Device driver software was not successfully installed'.

10) Take USBasp drivers from CD . Go to **Device Manager** in control Panel and you will find 'LibUSB-Win32 Devices'. Click on it and select **'Update Driver Software**...'



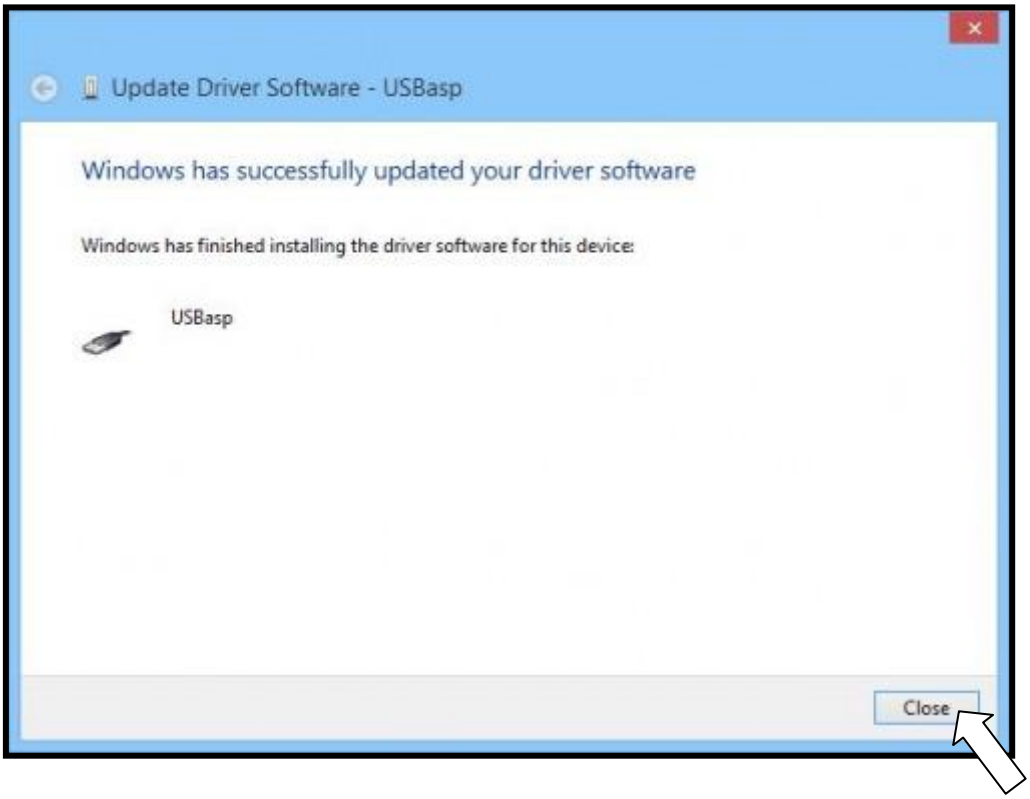

11) Select 'Browse my computer for driver software'. After this browse to the location where you have extracted the USBasp drivers


Update Driver Software - USBasp
Browse for driver software on your computer
Search for driver software in this location:
D:\Games\usbasp-windriver.2011-05-28
Browse...
Include subfolders
Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
Next
Cancel

12) Click next and ignore the security warning 'Windows can't verify the publisher of this driver software' and select 'Install this driver software anyway'

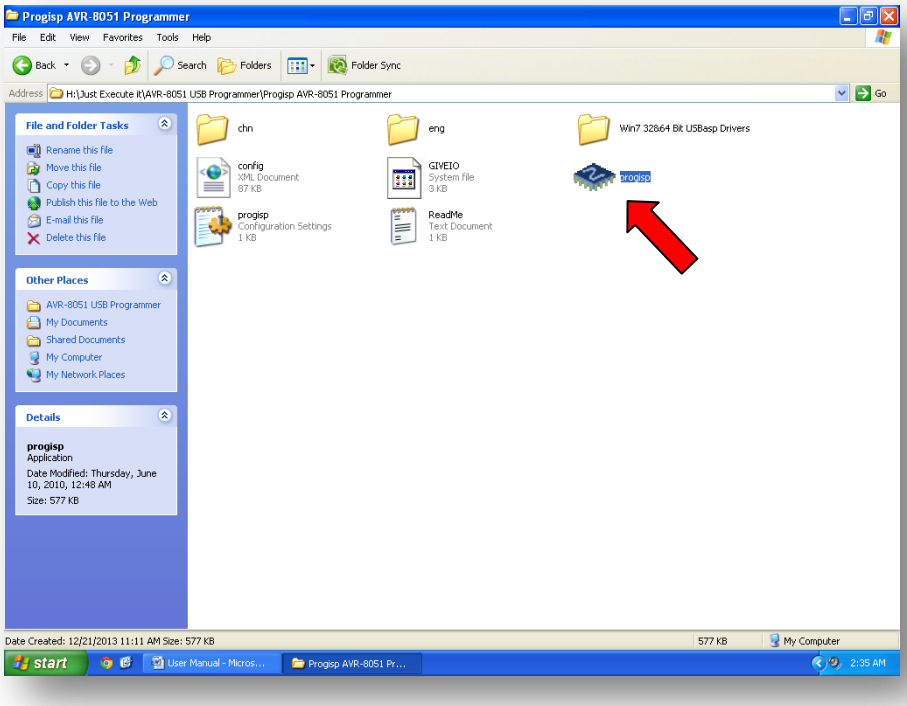
Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

13)Woot! if everything goes alright you will see something like this -

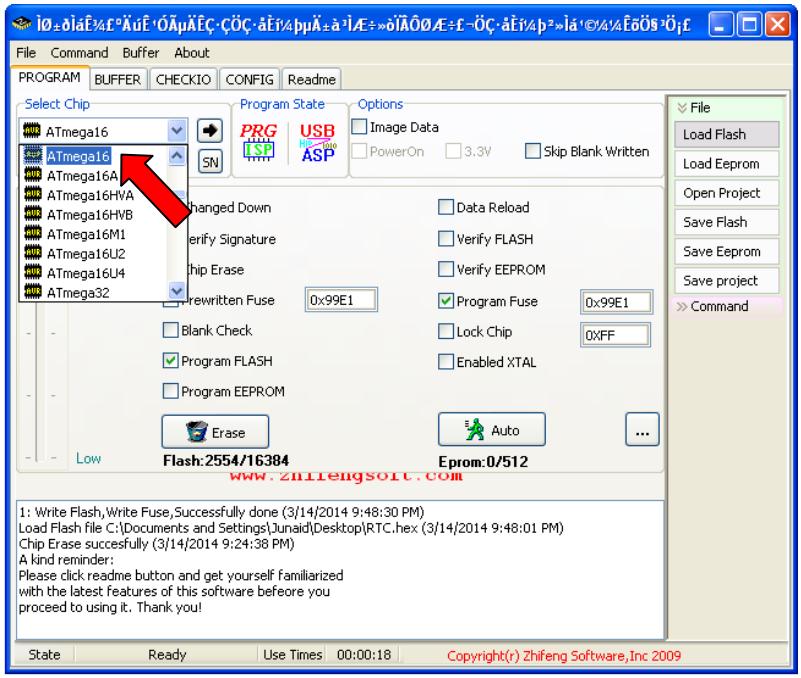

Update Driver Software - USBasp
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
USBasp
Close

## 4.3. Getting Code (.HEX file) into Microcontroller

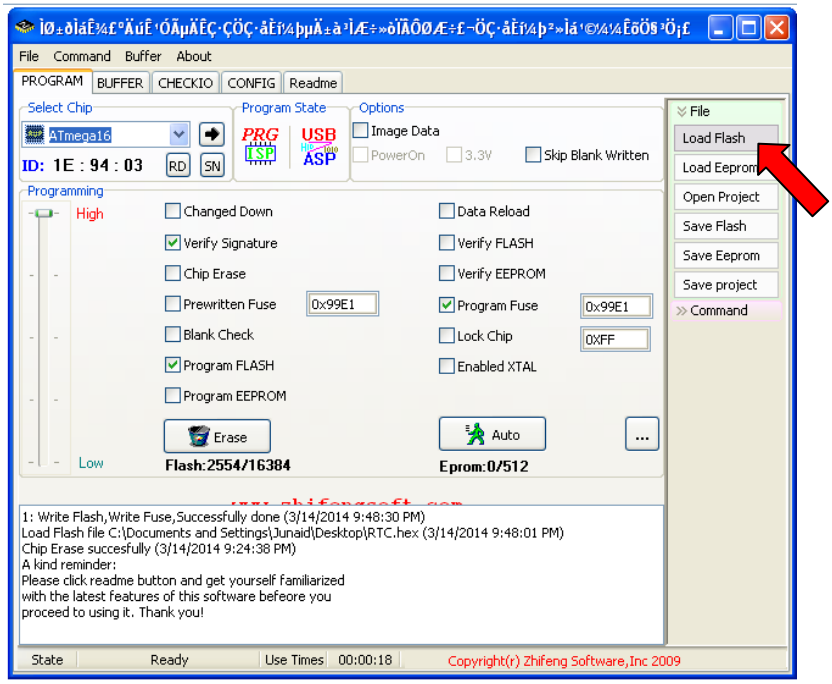
**Step 1:** Go to **Progisp AVR/8051 Programmer** Folder Present in CD and open **Progisp**



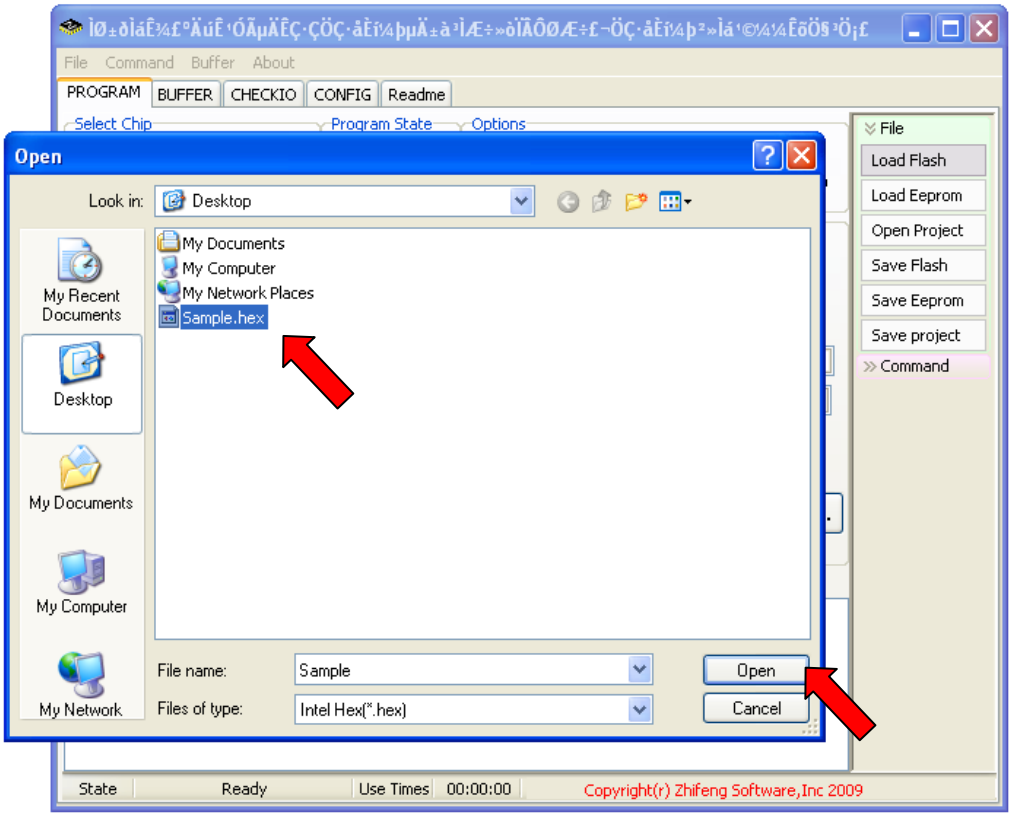

**Step 2:** Select the Micro controller



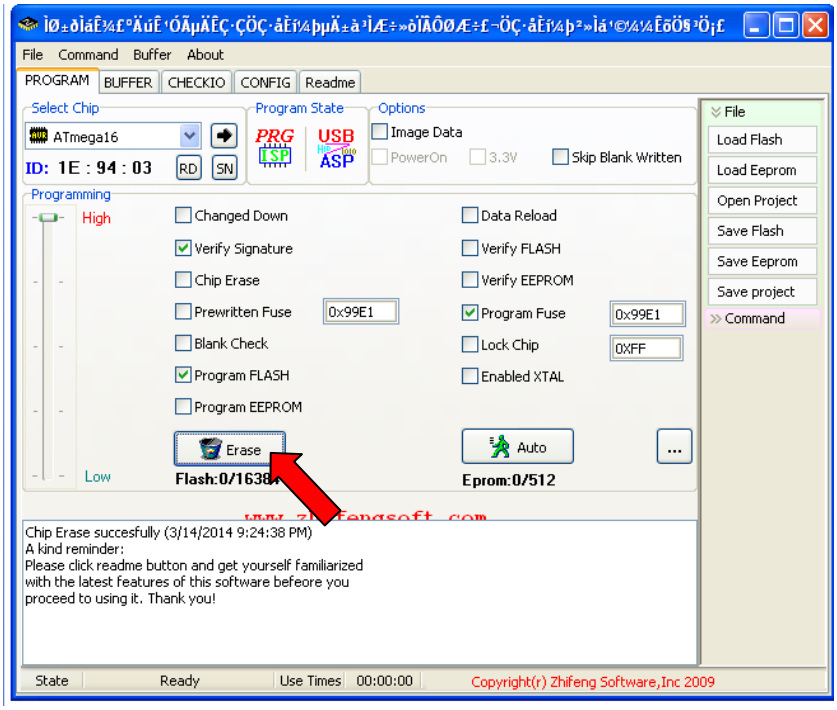
**Step 3:** Click on **Load Flash** to locate the **.HEX File**



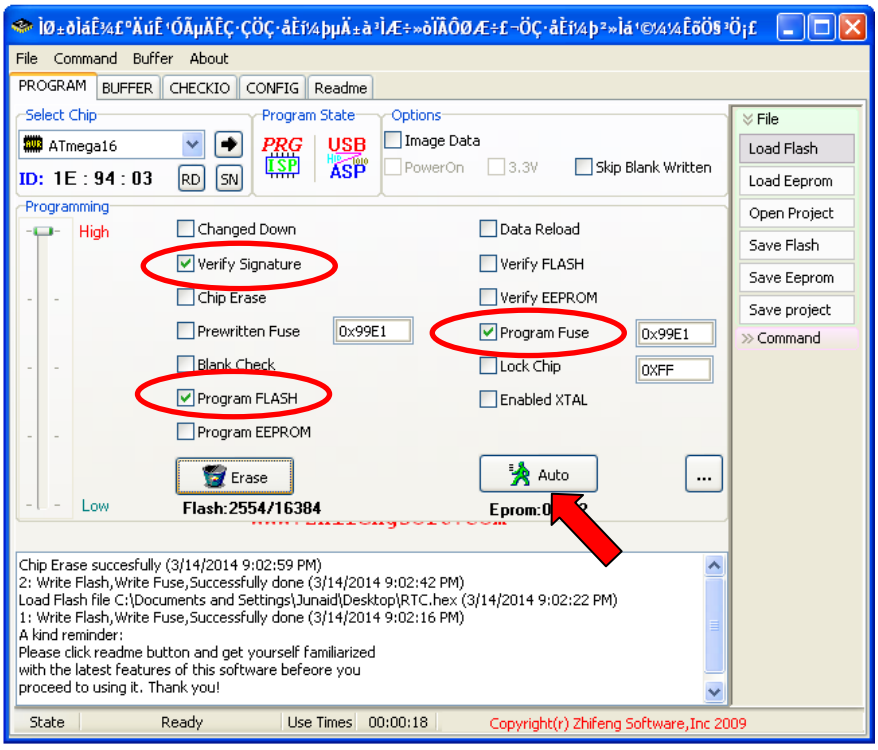

**Step 4:** Locating **Sample.HEX** file then click **Open**



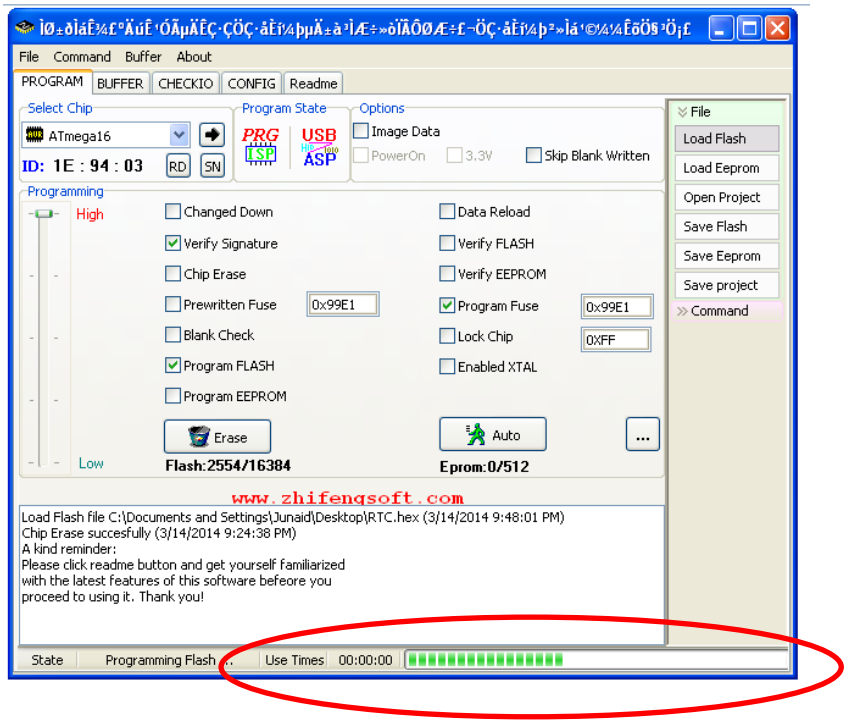
Step 5: Click **Erase**



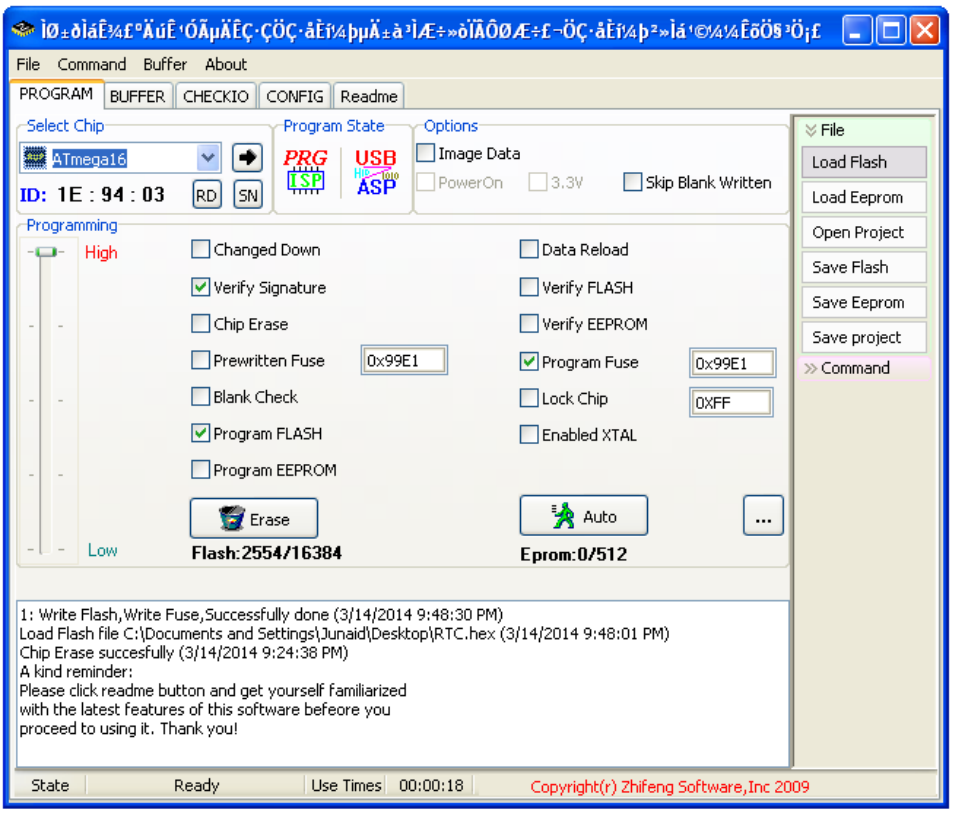

Step 6: Mark **1.** Verify Signature **2.** Program FLASH **3.** Program Fuse for **QUICK PROGRAMMING** and then Click **Auto**



Step 7: Wait few seconds while it's processing.




**Step8**: Now you can proceed to use your Microcontroller for your Application .**Thank you**



## 5. CONCLUSION

This board with multiple Peripherals interfacing Option will help the Student, Hobbyist, Teachers and R&D Engineers in Learning, Teaching, Executing and Prototyping the Real Time Embedded Applications.

# THANK YOU